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THE PLANT DISEASE REPORTER

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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The report on the incidence of plant diseases in North Carolina, page 486, was compiled by several members of the State Extension Service, the State College of Agriculture, and the Experiment Station. The report is for the year of 1942.

REPORTS ON DISEASES OF MISCELLANEOUS VEGETABLE CROPS

MAINE: Except where indicated, reports are for the period from August 22 to 28.

Bean (garden) -- Bacterial halo blight (Pseudomonas medicaginis var. phaseolicola) was general in fields in Portland, Scarboro, and at Highmoor, causing slight to severe damage. The systemic phase of the disease was quite pronounced. Anthracnose (Colletotrichum lindemuthianum) was general with damage very slight to slight in a field in Corinna and another in Winslow. Gray mold (Botrytis cinerea) occurred in local areas in Scarboro and generally in another field in Winslow; very slight damage was suffered in either field. Mosaic (virus) was general and causing moderate damage in one field in Corinna. It was locally prevalent with very slight to slight damage in Scarboro.

Carrot -- Aster yellows (virus) was generally prevalent and causing slight to moderate damage in 4 fields in Portland.

Cauliflower and Cabbage -- Club root (Plasmodiophora brassicae) was general and causing very severe damage in Scarboro. The loss in the field as whole was 25%. The lower end, comprising a quarter of the field, was a complete loss.

Cucurbits -- On cucumbers, angular leaf spot (Pseudomonas lachrymans) was general in a field in Portland where damage was moderate to severe, and another in Scarboro, with slight to moderate damage. Scab (Cladosporium cucumerinum) was causing slight to moderate damage in a field in Winslow. Moderate to severe scab and a slight amount of mosaic (virus) affected one lot of cucumbers being marketed in La Grange (September 19 to 25).

On squash, angular leaf spot was noted in a field in Portland, bacterial wilt (Erwinia tracheiphila) in a field in Scarboro, and aster yellows at Highmoor Farm, in each case causing only slight damage and occurring in local areas in the field.

Lettuce -- Leaf spot (? Septoria lactucae) was general but causing only slight damage in 2 fields in Portland. Aster yellows occurred in several fields in the Portland-Scarboro area, where it was causing very severe damage amounting to 25 to 35% loss of the crop in most fields.

Peas -- Slight to moderate amounts of powdery mildew (Erysiphe polygoni) were observed at Monticello and Presque Isle. (Robert C. Cassell, Emergency Plant Disease Prevention Project)

NEW HAMPSHIRE: (September 12 to 18, southern New Hampshire).

Celery -- One field in Manchester was generally and severely affected by late blight (Septoria apii).

Chinese Cabbage and Cabbage -- Black leaf spot (Alternaria circinans) was found generally present in Northwood, but occuring only on the older leaves and causing very slight damage.

Cucurbits -- Downy mildew (Pseudoperonospora cubensis) was general but causing slight damage in a cantaloup field in Northwood.

Powdery mildew (Erysiphe cichoracearum) was unimportant in a field of cucumbers at Durham.

On squash, anthracnose (Colletotrichum lagenarium) causing fruit rot was prevalent in Litchfield, Pittsfield, and Barnstead. Damage to the

fruit ranged from slight to moderate. Powdery mildew was recorded as generally present in only 2 fields, one in Northwood and one in Pittsfield, being slight in both cases. Powdery mildew is less serious in southern New Hampshire than farther south in New England. Black mold rot (Rhizopus sp.) was rather prevalent in Northwood and Pittsfield but damage was very slight. Alternaria fruit rot (Alternaria sp.) was general in fields in Northwood, Litchfield, Pittsfield, and Barnstead, but loss was slight as the rot appeared late on immature fruits. Brown fruit rot (Choaneophor cucurbitarum) was general but causing slight damage in Pittsfield, Barnstead, Northwood and Litchfield. (Robert C. Cassell, Emergency Plant Disease Prevention Project)

VERMONT: Bean -- Rust (Uromyces phaseoli var. typica) was generally prevalent on pole beans and causing loss ranging from very slight to severe, in Burlington and Essex Junction gardens. Mosaic was found on snap beans in a Burlington community garden, where it was general but causing only very slight to slight loss.

Carrot -- Slight to moderate amounts of leaf spot (probably Cercospora carotae) were found in a garden in Burlington and another in Essex Junction. Aster yellows was causing slight to moderate damage in 2 Burlington gardens.

Crucifers -- Black leaf spot (Alternaria circinans) was general on broccoli but causing practically no damage in 3 community gardens in Burlington.

Cucurbits -- On cucumber, mosaic (virus) infection was general but slight in one Burlington garden. Anthracnose leaf spot was causing moderate damage locally in Burlington.

Alternaria fruit rot of squash was general in Burlington but causing no loss since it occurred only on the small immature fruits. Slight to moderate amounts of powdery mildew were present on squash in 3 Burlington plantings.

Lettuce - Leaf spot (Septoria lactucae) was causing moderate damage to the leaves in 2 Burlington gardens.

Parsnip -- Cercospora leaf spot (C. pastinacae) caused no damage although generally present in one Burlington garden. (Robert C. Cassell, Emergency Plant Disease Prevention Project)

MASSACHUSETTS: Asparagus -- The first appearance of rust (Puccinia asparagi) noted this year, following the usually heavy outbreak in 1942, was a light scattered infection on Paradise asparagus in Hampshire County on September 17. The sori contained both uredo and teliospores, teliospores predominating. The same field was very severely damaged a year ago. (C. C. Boyd and Thomas Sproston, Jr., Massachusetts State College).

Bean -- Mostly very light attack, much lighter than usual at that season, of halo blight was observed in Middlesex County (August 25), Plymouth County (September 14), and Bristol County (September 15), on either snap beans or French Horticultural shell beans.

Dry root rot (Fusarium martii var. phaseoli) caused a 50% loss in one field of Plentiful snap beans in Bristol County observed on September 14. The grower reported a similar loss in the same field in 1942. This is the heaviest case of dry root rot that has been reported in Massachusetts.

Ordinarily, little or none of this disease is observed in any of the numerous varieties of green snap and shell beans commonly grown in the State.

Rust occurred generally in the Danvers section of Essex County on Kentucky Wonder. A report from Plymouth County on September 21 by county agent J. R. Beattie indicated light to moderate infections on Kentucky Wonder in a home garden while Potomac in the same planting showed considerable leaf spotting but little or no sporulation.

Gray mold rot was common this year in both snap beans and Limas in eastern Plymouth County and in Hampshire County, particularly where vine growth was heavy. A trace of angular leaf spot (Isariopsis griseola) was observed in a field of Plentiful snap beans in Plymouth County, September 14. Gerneral but light infections of mosaic were observed in Middlesex, Plymouth, and Essex Counties, September 13 to 15.

Beet -- Light attack by leaf spot (Cercospora beticola) was observed all counties visited.

Carrot -- A moderate, general spread of aster yellows was observed in Sunderland, Franklin County, on September 3, and general but slight damage in several fields in eastern Middlesex and southern Essex Counties. Cercospora leaf spot caused about 10% defoliation in a field in western Plymouth County (September 14), while both the Cercospora and the Alternaria (A. carotae) spots were observed in Middlesex and Essex Counties (September 13, 15) where they arrived late this year and cuased only slight losses, decidedly lower than usual.

Celery -- Early blight (Cercospora apii) was rather generally prevalent in all counties but with damage lighter than in most seasons, mostly light to moderate in southern Essex, eastern Middlesex and western Plymouth Counties. One severe case was observed in Waltham (September 13) and another in Concord (August 25).

Late blight (Septoria spp.) was much less prevalent generally than early blight. A very severe attack was noted in half of an irrigated 6-acre field in West Bridgewater, Plymouth County (September 14). Mostly light, scattered infections occurred in fields in other counties visited. There was no pronounced damage from either early or late blight where fields had been properly sprayed.

Black heart (physiogenic) caused practically a total loss in a 6- to 8-acre field of Summer Pascal in Concord, Middlesex County (August 25), and a 50% loss in a small planting of the same variety in Hampden County, (August 31).

Cruciferous Crops -- No black rot (Xamthomonas campestris) or black leg (Phoma lingam) was observed in any of the counties.

On broccoli, light to moderate attack of downy mildew (Peronospora parasitica) was observed on the lower leaves only in one field in western Plymouth County (September 14). Black leaf spot (Alternaria circinans) was general but caused very slight damage in the Waltham area of Middlesex County (September 13).

On cabbage, downy mildew was observed on lower leaves only in Bristol and Plymouth Counties (September 14, 15). Yellows (Fusarium oxysporum f. conglutinans) was present generally in several fields of cabbage in Danvers (Essex County) but was causing very slight damage. The first case ever reported from Bristol County was observed on September 15 with

50% plant infection and 20% loss. A light attack of black leaf spot was observed in a home garden in Berkshire County on September 2.

On cauliflower black leaf spot caused slight to moderate damage in 2 fields observed in eastern Middlesex County, and a very light case was noted in eastern Plymouth County (September 13, 14). Its prevalence was much less than in most past years. Club root was generally present in one field in the heading-up stage in eastern Plymouth County, September 14, but except for an occasional severely stunted plant, loss will be light. Light, localized infections with peppery leaf spot (Pseudomonas maculicola) were noted in one field in eastern Plymouth County, September 14. This disease also was much less prevalent than usual.

Cucurbits -- Light attacks by scab, anthracnose, and leaf blight (Alternaria cucumerina) on cantaloup were observed in Hampden County, August 31, and Bristol County, September 15, with losses decidedly lower than usual in either protected or unprotected plantings. In one Hampden County field, most of the plants of all varieties were wilting and dying prematurely apparently owing to a root rot. Isolations from root lesions yielded mostly species of Fusarium. Fruit rot (Fusarium sp.) was pronounced in a field of Bender Surprise in Bristol County, September 15.

Downy mildew on cucumber was first reported in the State this year by county agent Charles W. Harris, Jr., on September 10, in Bristol County. A 75 to 80% loss was observed in a 1-acre field in western Plymouth County, and an equally severe case in a small planting in the eastern part of the county (September 14). Likewise, light to severe infections were observed in garden and commercial plantings the following day in Bristol County. All cucumber plantings observed were infected. In 2 test plantings in Bristol County, the Porto Rico 39 variety showed a high degree of tolerance for the disease. Moderate to heavy infections were observed later in the same week in Hampshire County in and around Amherst.

Other diseases observed on cucumber were anthracnose, light scattered infections in 2 out of 4 fields visited in Bristol County on September 15; angular leaf spot, general but light field infections observed in Plymouth and Bristol Counties, and somewhat heavier infection in Waltham, Middlesex County (September 13 to 15); and mosaic, light to moderate losses in garden and late field (slicing) cucumbers in Bristol and Middlesex Counties (September 13, 15).

Light to moderate infections of downy mildew were observed in practically all fields of summer squash in eastern Middlesex County and in Plymouth County, also on both summer squash and pumpkins in Bristol County (September 13 to 15). In some instances, the squash vines in certain areas of late-planted fields of summer squash were severely spotted and "scorched" with marked defoliation resulting. This is the first outbreak of this disease on squash since 1932, when heavy infections were observed on both summer and winter squash vines in Amherst.

Brown rot (Choanephora cucurbitarum) was found generally in both summer and winter squash in Bristol, Essex, eastern Middlesex and Plymouth Counties (September 13 to 15), with slight to moderate losses.

The black rot or Mycosphaerella blight fungus (M. citrullina) caused leaf spots on the aging foliage of winter squash in Middlesex and Plymouth Counties. The disease was far less pronounced than usual in the drought-stricken eastern and southern parts of the State.

Scab was observed on the fruits in one field of summer squash in

Waltham, Middlesex County, September 13. Scab was much less common this year on both summer and winter squash fruits than usual.

Light to moderate infections of powdery mildew were observed on squash throughout the Boston area. Powdery mildew was also prevalent, as usual, particularly on the aging leaves, in Bristol, Plymouth, and the 3 Connecticut Valley Counties. One light case of leaf spot (Septoria cucurbitacearum) was observed on summer squash in Woburn, Middlesex County, September 13. Localized to scattered light infections of mosaic occurred in summer squash plantings in the Waltham section of Middlesex County.

Eggplant -- A moderate attack of Verticillium wilt (Verticillium sp.) was observed in western Plymouth County, and severe attacks with losses of 50 to 75% in Middlesex and Bristol Counties (September 13 to 15). This disease is the principal limiting factor to successful plantings in home gardens and commercial fields over all the State. Early blight (Alternaria solani) was general and common but causing very slight damage.

Lettuce -- Aster yellows was widespread this year in every county visited, but was causing most damage in the eastern, drier sections of the State. Losses ranged from very slight to 50%. Septoria leaf spot was causing moderate to severe damage in one irrigated field in southern Essex County, September 15.

Parsnip -- One Essex County field showed a general but light infection by Cercospora leaf spot (September 15). (Surveys made by Robert C. Cassell, Emergency Plant Disease Prevention Project, usually accompanied by E. F. Guba, Massachusetts Agricultural Experiment Station, or C. C. Boyd or Thomas Sproston Jr., and by the county agents of the counties indicated; from August 25 to September 21. Summarized by C. C. Boyd and Thomas Sproston, Jr., Massachusetts State College)

RHODE ISLAND: All crops in Rhode Island had been suffering and were developing prematurely because of the extended drought.

Bean -- On garden beans in Portsmouth, common bacterial blight (Xanthomonas phaseoli) occurred generally with very slight damage, and mosaic was found causing slight damage in local areas.

Cabbage -- Black rot (Xanthomonas campestris) caused a loss of 5 to 10% in a large field in Apponaug. Black leaf spot was general but caused very slight damage in one field in Apponaug.

Carrot -- Cercospora leaf spot caused moderate to severe defoliation in one Apponaug planting.

Celery -- In one local outbreak in Kingston, late blight caused loss estimated at 5%.

Cucurbits -- Downy mildew was rather widespread on cantaloup. General and severe damage was observed in Portsmouth, Apponaug, and Hillsgrove.

Powdery mildew was general on pumpkin in one Kingston field, where severe damage resulted from heavy defoliation.

On squash powdery mildew was widespread throughout the State, general although moderate damage having been observed in Portsmouth, Kingston, Slocum, and Apponaug.

Brown rot (Choanephora) of squash was general and causing severe damage in Kingston, Slocum, and Apponaug. Dr. F. L. Howard reports that this disease caused a loss in Rhode Island of about 2/3 of the fruits of summer squash and 1/2 of the winter squashes.

A general attack of anthracnose caused slight to moderate damage in one watermelon field in Portsmouth. Some of the fruits were badly affected.

Eggplant -- Verticillium wilt caused slight damage in one Portsmouth field. Leaf blight (Phomopsis vexans) was found in 2 fields in Portsmouth, where damage was general although slight since mostly only the lower leaves were affected.

Parsnip -- Slight to moderate damage was caused in one field in Slocum by Cercospora leaf spot.

Pepper -- Mosaic (virus) caused general but slight damage in one Apponaug field. (Robert C. Cassell, Emergency Plant Disease Prevention Project. September 5 to 11)

CONNECTICUT: Drought was a serious threat to all crops not harvested at the time of this survey.

Bean -- Mosaic was general but unimportant in a field of garden beans in Weathersfield.

Beet -- Leaf spot was general in Hamden and Cheshire causing very slight to moderate damage.

Carrot -- Aster yellows was general and causing moderate to severe damage in one field in Weathersfield.

Celery -- Slight damage from early blight occurred generally in Weathersfield and Hamden.

Cruciferous Crops -- General but slight attacks of black leaf spot were noted on broccoli in one field in Weathersfield, and on cauliflower in a field in Cheshire.

Cucurbits -- A general infection of mosaic was causing slight to moderate damage to cucumbers in a field in Weathersfield.

On squash, powdery mildew could be found in rather severe proportions anywhere in Connecticut. At the time of this survey the new leaves were relatively clean, probably because of the current drought, but older leaves were well covered or completely killed. Many cases of severe stem infection were found also.

Brown (Choanephora) rot was general and causing a moderate loss of fruit in one Hamden field.

Two cases of mosaic were found on squash. In a field in Middletown the disease was general and damage moderate to severe, resulting in many stunted, warty, and discolored fruits. In a Hamden field infection was local and damage very slight.

Eggplant -- Verticillium wilt was rather general in the New Haven-Hamden area where it was causing slight to moderate damage. One local outbreak, with slight to moderate loss, of Phomopsis fruit rot occurred in Hamden. A localized slight infection of mosaic was observed in a field in Hamden.

Pepper -- Mosaic was found rather generally distributed in several fields in the Hamden area. Damage ranged from very slight to very severe. Sun scald has been severe in all Victory gardens in the New Haven-Hamden area.

Rhubarb -- Leaf spot (Phyllosticta straminella) was found generally causing very slight to slight damage in Weathersfield and Hamden. (Robert C. Cassell, Emergency Plant Disease Prevention Project. September 5 to 11)

NEW YORK: Collaborators for the week ending August 28: Drs. O. A. Reinking, H. S. Cunningham, R. O. Magie, and A. H. Palmiter of the Geneva Agricultural Experiment Station; Mr. F. M. Gordon; Dr. F. A.

Haasis and Mr. B. L. Richards, Jr., of the Cornell Agricultural Experiment Station.

The disease survey for the week ending August 28 was carried on in 3 different New York areas. Parts of Onondaga, Madison, Oneida, Otsego, and Schoharie Counties comprise the first area; Greene, Columbia, Ulster, and Duchess Counties the second; with Nassau and Suffolk on Long Island the third area.

In the first area, beans and potatoes are among the predominant crops. Fruit crops are the important commercial crops in the second area, but also many vegetables are grown for home and market. The third area visited has a large vegetable growing industry with potatoes, perhaps, ranking first.

The Madison-Onondaga-Oneida-Otsego-Schoharie Area:

Beans -- More than 25,000 acres of snap beans are being grown in Madison County and vicinity. According to a canning company expert, the predominant bean varieties in this area are Brittle Wax, Bouthiful, Black Valentine, and Tendergreen.

The common bacterial blight of beans and anthracnose were quite generally prevalent along the route through this area but, with what appeared to be few exceptions, had not become destructive. However, in bean fields near Lebanon and Waterville, in Madison and Oneida Counties respectively, these 2 diseases were very destructive. Twenty-five to 40% of Wax beans in 1 field had bacterial blight and anthracnose. In 2 fields planted with Black Valentine, anthracnose and blight prevalence ranged from 75 to 100%. There was much pod infection both in Wax and Black Valentine varieties. These fields of severely diseased plants had been picked over once while fields showing a scattering of infection had not undergone picking operations.

Halo blight was noticed frequently in fields visited but in general it appeared currently unimportant in this area. It is probable that this disease will become more destructive before the crop season closes.

The dry root rot of beans (caused by Fusarium spp.) was noticed in a few fields but generally its prevalence was low and the pathogen appeared to confine its attacks to plants growing in unfavorable soil environments.

The common bean mosaic and the yellow mosaic of beans were noted in most of the bean fields visited but in general their prevalence was low.

In connection with a study of the bean mosaic problem in central and western New York, Mr. B. L. Richards, Jr. of Cornell reports as follows:

"In the fields of snap or green beans visited in Cayuga, Madison, and Chenango Counties, mosaic was found to be of minor importance and limited to a trace in most cases. The situation was, in general, similar with Red Kidney dry beans. In only 2 of 25 fields visited was more than a trace found. In 2 Red Kidney bean fields in southern Cayuga County rough counts showed that 10 to 12% of the plants had mosaic.

"Mosaic is, however, becoming a serious problem in the culture of pea beans in New York as indicated by recent reports of the increasing incidence of this disease in the Robust and Michelite pea bean varieties

which are supposed to be resistant to the Bean Virus 1. Some 12 fields of pea beans were examined in western New York (Orleans, Monroe, Niagara, Greene, and Livingston Counties). In most fields 1% or more of the plants showed mosaic, and in 2 fields of Robust 60 and 80% respectively of the plants were infected."

The Greene-Columbia-Ulster-Duchess Area:

A brief survey of vegetable diseases in the vicinity of Poughkeepsie in Duchess County revealed the presence of the following diseases: Verticillium wilt of eggplant (as high as 50% infection); anthracnose of pepper (prevalence on fruits up to 25%); bacterial wilt of cucurbits; Rhizopus rot of squash; and mosaic of peppers.

The Nassau-Suffolk Area:

Squash and Pumpkin -- Powdery mildew was rather prevalent on squash and pumpkin in fields near Roslyn. A soft rot (probably bacterial) of pumpkin also was prevalent in the same fields. Mosaic was present in a summer squash field near Old Brookvielle to the extent of 5%; most fields exhibited a trace of mosaic.

Other Vegetable Diseases -- The following miscellaneous diseases of vegetables were noticed in fields near Roslyn, Williston Park, Jericho, Hicksville, and Old Brookville: Yellow mosaic severe on Bountiful beans; common bacterial blight scattered in fields of snap beans; yellow mosaic very prevalent (20 to 35% of the plants) in 2 fields of Bountiful beans; common mosaic was present to the extent of a trace. Carrot leaf blights were noticed in most fields visited but not destructive. Cabbage soft rot (Erwinia carotovora) was very prevalent (15% of plants) in one field, and black rot was also found in the same field on an occasional plant.

At the eastern end of Long Island bacterial spot (Pseudomonas syringae) of Lima bean was prevalent, and downy mildew (Phytophthora phaseoli) was observed in one field. Bacterial wilt, mosaic, and powdery mildew were prevalent in cucumbers and the first 2 were destructive. Verticillium wilt was very prevalent in all eggplant fields visited.

Week ending September 18: The following information on bean diseases was contributed by the plant pathologists whose names are indicated:

Bean -- "Mosaic (bean virus 1) was present to the extent of 65% of the plants in French Horticultural beans being grown for seed for distribution to food growers in 1944. Source of seed from which these plants were grown is not known. Anthracnose is moderately severe on 15% of the plants in fields of the Bountiful variety examined in Genesee County. Common bacterial blight and halo blight are moderately severe, especially the former, on 15 to 20% of the plants in fields entered." -- Chas. Thomas, Genesee County, September 17

"In Chenango County near Sherburne and Norwich, snap beans or green beans were destructively affected by common bacterial blight but there was little halo blight. Dry shell beans such as Pea, Marrow, Kidney, and Yellow Eye, in Wayne, Wymoning, Schuyler, and Livingston Counties

were likewise severely affected by common bacterial blight but little by halo blight." -- W. H. Burkholder.

Week ending September 26: A disease survey was undertaken in parts of Tompkins, Wayne, Cayuga, Oswego, Onondaga, Madison, Chenango, and Cortland Counties, in central New York. Professor Charles Chupp of Cornell assisted in the identification of some diseases affecting different plants collected furing the week.

Bean -- Bacterial spot was slight on Lima beans near Genoa in Cayuga County. Leaf blight (Diaporthe phaseolorum) was slight on most of the plants in the same field.

Common bacterial blight was moderately severe on 50% of the Red Kidney beans in fields near Scipio and Owasco Lake in Cayuga County; 25% of the pods exhibited from 1 to 20 lesions per pod. Near Port Byron, the disease appeared light on most plants but 10 to 25% of the pods showed lesions.

Dry root rot was evident on 15 to 20% of the plants in 2 fields near Savannah in Wayne County.

Muckland grown vegetables near Fulton, in Oswego County, exhibited the following diseases:

Celery -- Late blight was observed in 3 fields visited. Infection varied from slight to moderate on most of the plants. Pycnidia were abundant on the lesions and conditions were favorable for disease development. Persistent dusting had not been followed in the fields with heavier infection.

The disease was noticed to be severe on all plants in a small field near South Lansing in Tompkins County.

Spinach - About 10% of the spinach growing on muckland (being harvested) was stunted. The roots of some of these stunted plants were examined and a Phycomycete was found invading the tissue. Considerable damping-off was evident, despite seed treatment with red copper oxide, when the plants emerged, according to the grower. It appears therefore, that some plants affected early were not killed by the damping-off fungi but continued to grow slowly.

Other Vegetables -- Alternaria leaf blight was noted in all fields of carrots visited but appeared to be doing little or no damage; malnutrition apparently was much more harmful. A half-acre field of Romaine lettuce was a total loss from virus (aster) yellows, typical symptoms being evident on practically all plants. Smut (Urocystis cepulae), according to the growers, had destroyed about 25% of the bulbs in 2 different onion fields. Control measures had not been followed. Club root had ruined approximately 20% of the cabbage plants in 1 field near Clay. (Leon J. Tyler, Emergency Plant Disease Prevention Project)

NEW JERSEY: During the week ending August 21 farms were visited in the southern part of New Jersey, in Salem, Cumberland, Cape May, and western part of Atlantic and Gloucester Counties. Special attention was given to tomato, pepper, eggplant, pumpkin, potato, asparagus, and sweetpotato.

Crops as a whole were suffering severely from drought in the entire section; beets were most seriously affected and asparagus least. Many peppers showed sun scald and poor blossom set.

Asparagus -- An extensive acreage was observed during the week. No asparagus rust was seen. Nearly all fields had some dead plants in them; on being pulled, the base of the stalk was found to be decayed as though by a rotting type of organism, with the fibers separated. Records of the approximate number of affected, so-called "wilted" plants, were made in 36 fields containing 608 acres. The average in the 36 fields was 3.7%. Eight fields with about a fifth of the total acreage (130 acres) had no affected plants; 1 large field (160 acres) containing somewhat more than a quarter of the total area examined had only a trace; another fifth of the acreage (125 acres) in 7 fields showed 1% affected plants. The amount of disease in other fields examined was as follows: 22 acres in 5 fields, 2%; 5 acres in 1 field, 3%; 75 acres in 5 fields, 4%; 20 acres in 2 fields, 5%; 5 acres in 1 field, 6%; 19 acres in 2 fields, 8%; 41 acres in 2 fields, 10%; 6 acres in 2 fields, 20%.

The cause of the trouble has not been determined. Some plants also showed cultivation injury.

Eggplant -- This crop was suffering severely from drought and much fruit was sunburned. No Phomopsis blight was observed. Anthracnose (Colletotrichum atramentarium) was severe in a 2-acre field near Auburn, an average of 8% of the fruits being affected.

In the same field, a large proportion of the plants were affected by a wilt disease, of Fusarium or Verticillium type. From affected plants sent to him for diagnosis, Dr. Leland Shanor isolated a Fusarium of undetermined species. This field had been planted to sweetpotatoes in 1942. Actual counts in 10 hills gave the following percentage of wilt: 62, 52, 24, 50, 56, averaging 48.8. In another, 1-acre, patch planted on low land between peppers and tomatoes, counts showed 30, 10, 30, or an average of 23.3% wilt. The adjacent peppers averaged 14%, and the tomatoes 21%, wilt; possibly all due to Fusarium.

Wilt records in 17 eggplant fields containing 61 acres, averaging 5.2% wilted plants, are as follows: none in 7 fields with 20 acres (about 1/3 of the total acreage); 1% in 5 fields with 25 acres (about 2/5 of the acreage); 2% in 1 2-acre field; 4% in 1 10-acre field; 6% in a 1-acre field; 23% in another 1-acre; and 49% in the 2-acre field reported.

Okra -- No diseases were evident in fields examined at this time.

Pepper -- Large acreages of peppers were visited. Diseased plants, with roots and base of stem dead and discolored, and tops in varying stages of wilt, were evident in most plantings. On a farm near Landisville, careful counts in the 1-acre patches of each of 4 different varieties gave the following results:

Variety	Percent Wilt by Count	Average percent wilt
Long Red (hot)	14, 6, 12, 10	10.5
Pear (hot)	22, 8, 8, 4, 2, 6	8.3
Cherry (hot)	28, 18, 14, 12, 14, 26	18.6
California Wonder (sweet)	8, 6, 6, 8	7.0
	Average	11.6

Near Auburn a 1-acre field showed an average of 11% wilt; another acre field near Penn Grove averaged 14%. Percentages in the 31 fields, containing a total of 199 acres, are as follows: a 1-acre field with 14%; a 4-acre field with 12%; another 1-acre field with 11%; 2 fields totalling 9 acres, 10%; 3 fields totalling 4 acres, 5%; 3 fields containing 37 acres (somewhat less than 1/5 of the total acreage), 4%; a 1-acre field with 3%; 11 fields with 68 acres (a little more than 1/3 of the total area), 1%; 8 fields with 74 acres (36% of the acreage), disease-free.

Fusarium annuum was isolated from diseased plants sent to Dr. Shanor.

Bacterial spot (Xanthomonas vesicatoria) on the leaves was more evident than expected in the Salem area; infection was resulting in shredding of the leaves. In the Cedarville area fruits were severely affected with sunburn and about 25% were being left in the field as unmarketable.

Pumpkin -- I did not visit the extensive pumpkin-growing area. A few pumpkin fields were examined in the Fairton area south of Bridgeton and the Penn Grove area north of Salem. Nearly all fields showed vines that were dying or dead, or hills with no vines. The pumpkin stalk borer was found in some wilted vines but not in all, indicating that the wilt was not caused by the activity of the insect but by some other factor, possibly Fusarium. An undetermined species of Fusarium was isolated from affected plants sent to Dr. Shanor.

This wilting was severe in most fields observed. Counts were made in each field examined: 50 hills were counted, assuming 2 plants to the hill. The number of dead, wilted, or missing plants were recorded to give the percentage of wilt direct. No record was kept of plants also containing the borer. The results of these counts are recorded as follows:

Location	Acreage	Percent of wilt as counted	Average Percent wilt
Vineland	6	30, 30, 40	33.3
Penniville	6	40, 54, 60, 90, 94	67.6
Cedarville	3	34, 34, 40, 44, 48	40.0
Hammonton	3	30, 26, 14, 20, 76	33.4
	2	30	30.0
	5	30	30.0
	5	10	10.0
	1	60	60.0
	1	0	0
Total and average	32		33.8

Week ending September 16: a few observations were made on vegetable diseases in Mercer County.

Cabbage -- A poor crop was harvested from a large acreage near Woodville. Drought definitely played some role, but the lower head and sucker leaves were severely affected with black leaf spot (Alternaria circinans).

Celery -- Late blight (Septoria apii) was very destructive to a small planting in a Victory garden near Lawrenceville.

Pepper -- In the Lawrenceville section no disease was found. In the Woodville section mosaic to the extent of 1% was observed; 10% of the fruit was affected by sun scald, followed by Alternaria; anthracnose (Colletotrichum nigrum) was moderate, 10% being noted; about 10% of the plants showed leaf spot caused by Alternaria solani.

Other Vegetables -- A considerable acreage of broccoli, cauliflower, and beans near Lawrenceville was free from diseases. Some "seeders" were observed in broccoli. (E. A. Walker, Emergency Plant Disease Prevention Project)

PENNSYLVANIA: Collaborator for the week ending September 4 was Dr. R. S. Kirby of Pennsylvania State College. Fields of vegetable crops were visited in Bucks, Montgomery, Lancaster, and York Counties in southeastern Pennsylvania.

During the following week, Dr. R. S. Kirby and Dr. F. H. Lewis of Pennsylvania were collaborators; also the county agents rendered valuable aid. Crops were inspected in Adams, Franklin, Cumberland, Dauphin, Lebanon, Berks, Lehigh, and Northampton Counties, in south central and southeastern Pennsylvania.

Asparagus -- Rust, and what appeared to be a Fusarium disease, were present to the extent of traces in a large commercial field near Morrisville, Bucks County (September 2). A Fusarium was found fruiting on the stems of plants affected by the latter diseases.

Bean -- Bean rust and Rhizoctonia root rot (R. solani) were each present to the extent of a trace near Morrisville. Common mosaic (bean virus 1) ran as high as 10 to 15% in some Morrisville fields. Yellow mosaic was present but owing to complications mainly due to dry weather a definite count could not be made. Both the common and halo bacterial blights were noted but there was only a scant trace of each. Also, a very few plants in fields near Morrisville exhibited symptoms of dry root rot.

Near Harrisburg in Dauphin County (September 8) the common bacterial blight was present to the extent of a trace on 25% of the plants in one field. Five percent of these plants exhibited definite symptoms of mosaic (bean virus 1).

In a small field of Lima beans near Sinking Springs, Berks County (September 9), bacterial blight was moderate on all plants.

Beet -- Cercospora leaf spot was light in garden beets and mangels near Harrisburg, Dauphin County (September 8). In commercial fields of red beets, variety Detroit Red, near Morrisville, Bucks County (September 2), leaf spot varied from light to moderately severe. Red beets in some of the Morrisville fields also exhibited brown sunken spots which varied in diameter from 1/16 to 1 inch and extended inward 1/2 to 3/4 inch. The necrotic tissue within the lesions was brown and rather dry. Usually, although not always, a small wound or opening was present in the center of each lesion. The disease had affected up to 50% of the beets in fields with a heavy soil type. An attempt is being made to determine the cause of this destructive disease.

Carrot -- Alternaria and Cercospora leaf blights were prevalent in Norristown (Montgomery County) Victory gardens; infection was moderate, (September 1). Moderately severe leaf blight and a trace of Rhizopus rot were observed in Morrisville (Bucks County) commercial fields; also

a condition in which nematodes were abundant in diseased tissues (September 2).

Celery -- A slight amount of bacterial soft rot (Erwinia carotovora) was reported to be present in fields near Lancaster (September 3). In Cumberland County, September 8, late blight varied from a trace to light on all plants in fields near Carlisle and Camp Hill. Early blight was present to the extent of a trace on 25% of the plants in a field near Camp Hill, and in the same field bacterial soft rot had destroyed about 5% of the plants. Irrigation was practiced extensively in this field. Cercospora (early) blight was moderately severe on all plants in a field near Sinking Springs, Berks County (September 9).

Crucifers -- Alternaria leaf spot [species not designated] was found to vary from a trace to slight in Victory gardens at Norristown, Montgomery County (September 1).

Cucurbits -- Anthracnose (very slight), Alternaria blight (very light to moderately severe depending on variety), and powdery mildew (none to severe depending on variety) were noted on cantaloup on a plant-breeding farm near Doylestown, Bucks County, September 2.

Bacterial wilt was observed on 5 to 10% of the cucumber plants in Victory gardens at Norristown, Montgomery County, September 1; and a trace was noted in cucumber fields near Doylestown. Angular leaf spot was reported to be prevalent on certain cucumber lines grown on a Norristown plant breeding farm. The symptoms observed by the writer were not at all typical and were further complicated by the destructive feeding of cucumber beetles.

Near Sinking Springs, Berks County (September 9) a leaf spot of pumpkin probably caused by Phyllosticta sp. was moderate on 25% of the plants.

A light amount of anthracnose and slight Mycosphaerella fruit spot were observed on squash near Doylestown.

Eggplant -- Phomopsis blight (severe on the fruit and a trace on the leaves) and Verticillium wilt (slight) were noted in plant breeding plots near Doylestown, Bucks County (September 2). Two percent of the plants in a field near Sinking Springs had Verticillium wilt and Alternaria leaf spot was present to the extent of a trace on all plants (Berks County, September 9).

Lettuce -- Septoria leaf spot was light in Norristown Victory gardens (Montgomery County, September 1).

Okra -- Traces of Alternaria leaf spot were noted on all plants in one Montgomery County Vitctory garden (September 1).

Parsnip -- Severe Cercospora leaf spot was noticed on 75% of the plants in a small field near Carlisle, Cumberland County (September 8).

Pepper -- Mosaic was present in about 3% of the plants in a small field near Sinking Springs (September 9).

Rhubarb -- Phyllosticta leaf spot was present to the extent of a trace on all plants in a small field near Palmyra, Lebanon County (September 9). (Leon J. Tyler, Emergency Plant Disease Prevention Project).

VIRGINIA: (Western Virginia, September 13 to 18).

Bean -- Rust was found in Washington County (on 75% of the leaves in one garden, less in others); and in Wythe County. Anthracnose had caused nearly 100% loss of crop in one field near Abingdon, and was present but causing little loss in many other gardens. Bacterial blight was slight on pods in a commercial planting near Abingdon.

Cabbage -- Alternaria leaf spot is the chief disease present at this time in a cabbage section near Marion. In one field all leaves were slightly affected. Very little crop loss was apparent. Cabbage yellows was not seen. Only yellows-resistant varieties are grown here. Black rot was observed as a trace.

Rutabaga -- Boron deficiency symptoms were found in rutabaga fields near Marion, Smyth County. In one 2-acre field 75% of the roots were affected. The crop loss due to this deficiency is estimated at from $250 to $300 per acre, a complete loss, as it is safe to assume that all affected roots can be sorted out by external symptoms.

The annual rutabaga production in this section is said to be 500 to 600 acres annually, with an estimated 10% loss due to boron deficiency. At 1943 prices this crop value ranged from $400 to $500 per acre. The estimated loss places the monetary loss at upwards of $20,000 this year.

This trouble had not previously been known to occur in this section. Since its discovery by the writer, Dr. E. K. Vaughan, Extension Plant Pathologist in Virginia, is making recommendations for its control to prevent this loss to the growers. (C. F. Taylor, Emergency Plant Disease Prevention Project).

WEST VIRGINIA: (September 6 to 11, northern panhandle, along the Ohio River; September 13 to 18, southern West Virginia).

Bean -- Bacterial blight on pods and leaves was found in the northern panhandle in on patch planted with home-grown seed similarly affected in 1942. This year it had affected approximately 5% of the pods and 100% of the leaves, and the owner estimated a 25% loss in yield. This disease was rare in other bean fields examined in this region.

Rust was found in Randolph County, in southern West Virginia. Anthracnose had caused nearly 100% loss in pole beans in a field near Elkins in Randolph County. It was present but causing little loss in many other gardens.

Downy mildew had destroyed approximately 15% of the pods in one plot of pole Lima beans in the northern panhandle region. Specimens have been sent in to Morgantown from one or two other locations in the State.

Cucumber -- In the vicinity of Morgantown, anthracnose has destroyed several small plots of cucumbers recently. (C. F. Taylor, Emergency Plant Disease Prevention Project.)

KENTUCKY AND TENNESSEE:

Bean -- In Union County, northeastern Tennessee, a 1-acre field was severely affected by common bacterial blight, about 30% of the plants had rust; 6% of mosaic (virus) was present; powdery mildew (Erysiphe polygoni) was general but light. An adjacent older field of beans was prematurely defoliated [? cause]. (September 8 to 11).

Three fields and 2 auctions were visited in Johnson County in northeastern Tennessee. Anthracnose is light in the late crop. Dry weather is reducing the yield (September 14 to 18).

Near Nashville a 10-acre field of Red Valentine had a 40% reduction in stand with plants still dying, apparently from dry root rot (Fusarium martii var. phaseoli). Root knot was found, also (September 21 to 25).

Cucumber -- Anthracnose was general in a field in Madison County in southwestern Tennessee (August 23 to 28).

Pepper -- A 1-acre field in Shelby County in extreme southwestern Tennessee showed 25 to 30% loss due to sun scald and blossom-end rot. Another 1-acre field in Gibson County in the western part had 20% of southern blight, as well as missing hills from other causes and much sun scald. (August 23 to 28).

In northern Kentucky, 1 Jefferson County field had 60 to 70% sun scald, another showed 2% of the plants with all the leaves wilted. In a 1 1/2-acre plot in Fayette County 25% of the plants were dead; the leaves were wilted and brown. (August 30 to September 3). (Russell A. Hyre, Emergency Plant Disease Prevention Project)

NORTH CAROLINA: During the week from September 6 to 11 the truck-growing area in the North Carolina mountains was visited after reports of a bean anthracnose epidemic had reached Raleigh. The counties visited, in which extensive truck is grown in the fall, were Alleghany, Ashe, Watauga in the north, and Buncombe, Transylvania, and Henderson in the south.

Green Beans -- The bean crop in the valleys in the northern counties was almost over. On the mountain tops, however, the crop was still coming in. Owing to the difficulty of finding these fields, and because the county agents this week were in Raleigh at a conference, I visited the markets at West Jefferson in Ashe County and Boone in Watauga County. Market men told me there that many farmers had not harvested large fields earlier in the year because of "nail head rust" (anthracnose). They said that scattered farms throughout the mountains were still having trouble, and some beans were turned away from the market each night due to this trouble.

In the southern counties the second crop of beans was being picked. The first crop had been badly damaged by "nail head rust" during June according to several growers. There was almost no anthracnose in the fields at present. Pickers occasionally ran across a spotted pod.

Rust and powdery mildew were present but not economically important. One field with 50% of the plants infected with mosaic was found. The most commonly present disease was a leaf spot caused by Cercospora cruenta, which, in some fields, was causing 30 to 40% defoliation. The plants were very poor and looked as though one picking would be all that could be made. The leaves were yellowed and the rows were filled with dried leaves that rustled as you walked through them. The leaf spot was causing much more damage than the Mexican bean beetle to these fields. The beetle was being controlled with rotenone.

Cabbage -- Cabbage in the northern counties was beginning to come in to market at this time. The crop was very light owing to drought. Some growers reported 3 tons per acre compared with 7 tons last year. Many growers had planted later and were counting on a rain the third week in September to save their crop. (R. E. Atkinson, Emergency Plant Disease Prevention Project)

LOUISIANA AND MISSISSIPPI:

Bean -- Bean fields were visited in southeastern Mississippi during the week ending September 4. In 1 15-acre field of bunch snap beans near Crystal Springs, 1 to 2% of the plants were killed by Sclerotium rolfsii.

In another 10-acre field, the growing tip of 15 to 20% of the plants was killed by Pythium sp. Seedlings so affected eventually die. Approximately 1% of the seedlings were killed by S. rolfsii, and many showed lesions below the ground caused by Rhizoctonia solani. Both seed leaves of about 2 to 3% of the seedlings appeared as though scalded. Plantings from the scalded areas gave 100% Rhizoctonia, both R. microsclerotia and R. solani were later determined to be present. In this field the estimated loss in stand due to this combination of diseases was 25%.

En route to Mississippi at the end of the following week, several bean fields were examined in southeastern Louisiana on the highway from Hammond to Ponchatoula in Tangipahoa Parish. Sclerotium rolfsii was the only organism found causing wilting of the bean seedlings. Only a trace was found in most fields, but in one from 0.5 to 1% of the plants were killed.

During the period from September 23 to 25, short trips were made in southeastern Louisiana. The commercial bean-growing areas around Hammond and Ponchatoula in Tangipahoa Parish, Denham Springs in Livingston Parish, and Gonzales in Ascension Parish, were visited. A general 4-day rain had fallen from September 16 to 19, in some areas as much as 8 inches being reported. The older bean crop, in the flowering stage, was severely damaged, many of the fields having from 80 to 90% of the plants dead. The plants had the appearance of having been scalded, with the upper beans dry and brittle. In the Gonzales area 75 to 80% of the fields were a total loss; in the other areas visited the loss will be at least 50%. Fields of young plants, including an estimated 25 to 30% of the crop were only slightly damaged by this scalding. The trouble was due to excessive rainfall followed by bright sunshine while the plants were in a very turgid condition.

In 1 field of beans on sandy soil S.rolfsii had killed approximately 5% of the seedlings. Bacterial blight [organism not specified] was observed in 1 field of young beans, on the primary or seed leaves. Only a trace was present. A trace of Sclerotium bateticola was found in 1 field.

Cabbage -- In southeastern Louisiana during the period from September 23 to 25, many cabbage fields of from 2 to 5 acres, that had been transplanted a week to 10 days earlier had from 10 to 20% of the plants dead. The stems were water-logged and breaking down from secondary organisms (bacterial soft rot). Bell peppers and beans have frequently been observed to wilt following heavy rains (see bean) and it appears certain that this condition in cabbage was caused by excessive rainfall and not by an organism.

Cucumber -- In southeastern Louisiana, during this period from September 23 to 25, several fields of cucumbers were observed with from 5 to 10% of the plants killed. Most of the damage was in the lower ends of the fields, due to excess water. Downy mildew (Pseudoperonospora cubensis) was found, varying from a trace to light infection, most fields that have been kept thoroughly sprayed or dusted showing only a trace.

Pepper -- One 2-acre field of late Bell peppers was seen in which 90% of the plants were wilted following the heavy rain in southeastern Louisiana (see bean). Only plants in the outside 2 rows, which were somewhat higher than the remainder of the field, were not killed. (L. H. Person, Emergency Plant Disease Prevention Project)

TEXAS: The rather large truck plantings of the State Prison Farm at Sugarland, Fort Bend County, were visited. In a 2-acre patch of eggplants 85% of the plants had yellows symptoms (virus). About 2 acres of peppers showed many depauperate plants. A considerable number of these was pulled up in various parts of the field; all showed heavy infection by the root knot nematode. In a field of 3 or 4 acres of cowpeas 95% of the plants showed strong symptoms of mosaic (virus).

Severe damage from Cercospora leaf spot of cowpeas (Cercospora cruenta) was seen in several fields throughout the Gulf Coast plains area, especially at East Bernard, Angleton, and near Palacios. (G. H. Watkins, Emergency Plant Disease Prevention Project. Week ending September 11)

OKLAHOMA: (report for period from September 3 to 12).

Canteloup -- A total of 5 acres was examined. In the 1-1/2 acre planting at Supply (Woodward County, northwest), nearly 100% loss was caused by bacterial wilt. The 2 varieties planted in this field, Hearts of Gold and H. B. 36, showed very little if any difference in susceptibility. The insect vector was still present in large numbers in this planting, although nearly all the plants were dead. Alternaria leaf spot could be found on the leaves of plants still living in this field, and was the only disease observed in the other fields examined. The estimated loss was less than 1%.

Pepper (20 acres observed) -- Two diseases occurred in all of the fields surveyed. Wilt [cause not designated; ? presumably Fusarium sp.] in the plantings at Perkins (Payne County, northcentral) and Supply inflicted a loss of nearly 15%; whereas it was observed on 1 or 2 plants in a small planting at Woodward. Alternaria fruit spot (Alternaria sp.) was rather common in the Perkins and Supply plantings, where it was causing a loss estimated at 2%. (Howard W. Larsh, Emergency Plant Disease Prevention Project)

ARKANSAS -- (except where noted the report is for the period August 21 to 31).

Bean (300 acres observed) -- In the bean plantings of Washington and Benton Counties in northwest Arkansas the extent of injury from diseases was very difficult to determine because of the severe attack of the lesser corn root borer. Two fungi in particular were observed in 1 or 2 plantings in this region, namely Fusarium sp. and a species of Sclerotium with small black sclerotia, probably S. bataticola.

At Rohwer in southeastern Arkansas (Desha County) 1 field of 100 acres was a complete loss from mosaic.

Canteloup (125 acres) -- The most prevalent disease observed was Alternaria leaf spot (A. cucumerina), but the injury caused was very light since the extreme drought prevented spread although inoculum was abundant in each field examined. In plantings at Rohwer at least 15% of the leaves were infected.

Downy mildew (Pseudoperonospora cubensis) was found on the older leaves of a few plants, causing very little injury.

Bacterial wilt (Erwinia tracheiphila) was observed on 3 plants in a planting of less than an acre at Clarkedale (Crittenden County, east).

Eggplant -- In a planting of 3 1/2 acres in the Japanese relocation centerat Rohwer a loss of at least 15% was evident from the combined attacks of Fusarium wilt and Sclerotium rolfsii.

Pepper -- In the 47 acres examined during the period from August 21 to 31, Fusarium wilt (Fusarium sp.) was observed in plantings at Rohwer, Stuttgart (Arkansas County, east), north of Van Buren (Crawford County, northwest), and Springdale (Washington County, northwest). In a 3 1/2 acre planting at Rohwer nearly 25% loss of plants resulted from this disease. Damage in the planting at Stuttgart was at least 15%. Greatest damage observed was a few miles north of Van Buren where 35% of the plants were dead and many others showed wilting. Sclerotium rolfsii was associated with the Fusarium wilt at Rohwer and Van Buren.

Alternaria sp. was causing a great deal of damage, at least 10%, to fruits in the Springdale region.

On a later trip, during September, 2 plantings consisting of 67 acres not examined previously in the Van Buren area, were observed to be infected with Verticillium wilt. In one almost 40-acre planting the loss was nearly 35%. In the other planting, of 27 acres, a mixed infection of Verticillium wilt and southern blight was causing a loss of nearly 20%. In a field near Lincoln (Washington County) nearly 10% of the plants had been destroyed by the wilt. (Howard W. Larsh, Emergency Plant Disease Prevention Project)

INDIANA: From August 24 to 27 a survey was made in northwestern Indiana. In this section of the State there are large areas of muck soil in the vicinity of Newland, North Judson, and LaPorte.

Cabbage -- Cabbage in 1 of 3 fields examined was infected with club root and black rot.

Cantaloup -- A 4-acre field of cantaloups in LaPorte County were defoliated severely by leaf spot (Alternaria cucumerina). Approximately 60% of the leaves were infected severely. The melons in this field were being picked; however, the severe defoliation will certainly reduce the yield and quality of the late maturing fruits.

Onion -- Onions in the vicinity of Newland, North Judson, and LaPorte were being harvested. Onions grown on the muck soils in the vicinity of North Judson and LaPorte were infected slightly to severely with pink root (Phoma terrestris). Seventy-five percent of the roots on some of the onions were pink and dead. No attempt was made to correlate the degree of infection with reduction in yield, because of lack of information on the effect of this disease on yield in Indiana. In the Newland area the onions were free from pink root; however, an occasional onion was infected with soft rot (Bacillus carotovorus). (R. C. Baines, Emergency Plant Disease Prevention Project)

ILLINOIS: From September 6 to 10 a survey was made of the diseases occurring especially on the vegetable crops in a circuit around northern Illinois from Urbana to Bloomington, Rochelle, De Kalb, Rockford, Freeport, Savannah, Morrison, Sterling, Peoria, and Urbana. This trip was made in the company of Dr. M. B. Linn of the Illinois Agricultural Experiment Station.

Beans -- In 2 plantings of green or snap beans near Rockford and 2 near Peoria a trace to moderate bacterial blight was found. Between 2 to 3 % of the plants were infected with mosaic in 2 of the plantings.

The leaves of Lima beans in large acreages grown for canning near De Kalb were infected moderately to severe with Xanthmonas phaseoli (blight), which had reduced the leaf area 15 to 30%. Very few pods were affected with bacterial blight and 1 to 2% with a soil rot, presumably due to Rhizoctonia.

Cabbage -- A half-acre field of cabbage near Peoria was a complete loss due to infection with Phoma lingam (black leg). The stems of the half mature plants were girdled near the soil and numerous lesions occurred on the leaves and near the leaf scars on the stem.

Eggplant -- Eggplants in 7 plantings at distantly separated places were infected with Verticillium alboatrum (wilt). Between 5 and 100% of the plants were infected severely or killed in the different plantings.

In a planting near Rock Falls about 25% of the fruits were infected and rotted with Phomopsis vexans.

Endive -- Between 3 to 5% of the endive in a 1/5-acre planting near Peoria was infected with aster yellows.

Pepper -- Approximately 5% of the Bell pepper plants in an acre planting near Sterling were affected with wilt. The vascular tissue was brown colored. The causal nature of the wilt is being determined.

The fruit and leaves of peppers in a 3-acre field near Rock Falls were affected slightly with bacterial spot (Xarthomonas vesicatoria). In the same planting approximately 5% of the plants were affected with a virus disease, which caused a mottling of the leaves and stunted the plants.

Pumpkin -- Many of the immature pumpkins in a field of Connecticut field pumpkins near De Kalb were severely spotted with small water soaked, yellowish lesions between 1/8 and 1/4 inch in diameter. Large pit-like lesions were found on mature fruits. Dried glistening exudate generally was present on the surface of the spots. Numerous short-rod bacteria were found in the affected tissue. There was a conspicuous absence of lesions on the leaves. The identity of the causal organisms is being determined by Dr. M. B. Linn.

Watermelon -- In a field of watermelons near Thomson approximately 90% of the Cuban Queen and Florida Giant varieties were killed by Fusarium bulbiganum var niveum (wilt). (R. C. Baines, Emergency Plant Disease Prevention Project.

MICHIGAN: Detroit Vegetable Market Garden Area Notes (August 23 to 28)-- Bacterial blight is extensive on string beans, being found on Black Valentine, Plentiful, and Bountiful. Anthracnose is found on Black Valentine and is doing much damage to the Pencil Pod wax beans.

Both early blight and late blight are common on celery and doing considerable damage. Infection got a start in the early spring season when wet weather made spraying difficult.

Alternaria blight was mild in one melon field and was being controlled by a copper spray. Some copper injury was found on the leaves.

No fungus or bacterial disease was noticed on onions but insect damage is severe. The crop is a failure owing to unfavorable early spring weather.

Peppers are generally healthy. One planting shows a leaf spot (Alternaria sp.) and a mosaic condition.

Frost Damage -- On the night of September 10 and to a lesser degree the following night a frost killed tomatoes, cucumbers, squash, beans, and melons in the Grand Rapids area and northward. A few upland areas near small lakes escaped damage.

Bean -- (August 23 to 28). Navy bean fields between Saint Johns and Owosso were generally free from disease except for an occasional plant showing bacterial blight (common or halo or both). An occasional plant in most of the fields showed mosaic and one field showed about 20% of the plants infected with mosaic. Most of the fields are late and about half of them have first pods no older than the pre-snap-bean state. An early frost would cause considerable loss.

(September 13 to 18). The top leaves and late flowers were frozen off beans on September 10. Since then, more damage has been done by frost. Just prior to this damage beans for canning north of the Lake Odessa region were relatively free of the bacterial blights but showed spots of anthracnose. The varieties most commonly grown are Green Refugee and Stringless Kidney Wax.

Field beans in the southern half of the State were mostly mature when frost stopped their growth. As the season came to a close bacterial blight had increased to as much as 10% in a few fields but the majority were relatively free. Mosaic was found in about half of the fields inspected but it infected only a low percentage of the plants and did no appreciable damage.

Melons -- (September 6 to 11) A few plantings of melons near Saint Joseph were found to be heavily infected with leaf spots, caused by both anthracnose and Alternaria. Spraying was resorted to in an effort to control these diseases but was not entirely successful. A Bordeaux spray of 2-4-100 was applied when the runners were a foot long and every 10 days thereafter. As the season advanced this was increased to a strength of 4-8-100. Some copper injury was apparent on the vines. The fungi causing the leaf spots had killed nearly 2/3 of the leaves by the end of the season but the growers harvested what they considered a satisfactory crop.

Onion -- (September 13 to 18). Fields of onions in the vicinity of Eaton Rapids and the Gunn Swamp area were found to be generally infected with pink root (Phoma terrestris). The amount of damage done was less than it might have been because the disease did not appear until late in the growing season. Most of the onion plants were able to mature and the bulbs were of a good size before the roots were attacked by the fungus. The only explanation of this seems to be that weather conditions kept the fungus from becoming active earlier in the season. (H. N. Harris, Emergency Plant Disease Prevention Project)

COLORADO: Bean -- In the vicinity of Mack in Mesa County, only a slight amount of been rust was found. In 1 field, in 2 medium-size patches, the plants were heavily rusted. Damage was slight and weather

conditions were apparently unfavorable for further spread.

The virus disease caused by a virus closely related to bean virus 2 or yellow bean mosaic virus, reported by W. J. Virgin from southern Idaho (Phytopath. 33:743-745, 1943) ["characterized by a pronounced reddish discoloration of the nodes"], has been found to be widespread in Colorado. In 1 field of Pinto beans, near Limon in Lincoln County, 50% of the plants were infected. The yield in this field was reduced easily 25%. In Montezuma County only a trace of infection was found. In Mesa County, several fields showed a trace to 1% of the plants infected. In Weld County infection was general, although with only a few infected plants per field.

Bean mosaic was widespread in Mesa and Montrose Counties; infection in fields generally amounting to about 2% of the plants. In 1 field near Mack in Mesa County, about 80% of the plants were infected and the pod set was greatly reduced.

Dry root rot (Fusarium martii var. phaseoli) was very prevalent in the vicinities of Grand Junction, Fruita, Loma, and Mack, in Mesa County. In some fields as high as 80 to 90% of the plants are diseases; while in many others 10 to 20% are affected. Many of these fields have been planted to beans for many years in succession. The damage was slight in most fields, since infection apparently occurred late in the growing season. However, in a few fields yields will be reduced 5 to 6%.

Only a trace of common bacterial blight was found in Mesa County. At Fort Lewis in LaPlata County, garden bean varieties were moderately affected.

A diseased condition, apparently of physiogenic origin, occurred in many bean fields in Mesa County. Leaves started to turn red and yellow in the early part of August, and fell before maturity, leaving only the stems and petioles. In some cases it appeared that new terminal leaves were developed in late August. In many fields, small to large patches of plants show this condition.

Cantaloup -- In the cantaloup district around Avondale in Pueblo County, Alternaria leaf blight was very general. In many fields 100% of the plants were affected. However, infection took place late in the growing season and damage was slight.

In the McElmo canyon, near Cortez in Montezuma County, powdery mildew was very destructive. Many small patches were damaged severely.

Onion -- Only a few plants were found affected by pink root (Phoma terrestris) or bulb rot (Fusarium vasinfectum var.zonatum) in Mesa, Delta, and Montrose Counties, and no purple blotch (Alternaria porri) was noted. (E. W. Bodine, Emergency Plant Disease Prevention Project)

NEW MEXICO: Observations on vegetable diseases are summarized as follows:

HOST Disease	Date County: Town	Damage	Type or Variety	Area or Number of Plants
BEAN				
Common bacterial blight	September 10			
	Otero: High Rolls	Slight		1 acre
	September 11			
	Eddy: Artesia	Slight	Pinto	10 acres
	September 14			
	Quay: House	Heavy	"	2 acres
	"	Heavy	"	30 acres
	September 15			
	Torrance: Negra	Moderate	"	240 acres
	Estancia	Slight	"	5 acres
	Mountainair	Moderate	"	20 acres
	"	Moderate	"	20 acres
	"	Moderate	"	20 acres
	"	Heavy	"	30 acres
	September 17			
	Bernalillo: Albuquerque	Slight	"	5 acres
Rust	September 11			
	Eddy: Artesia	Heavy	"	Farm garden
	September 15			
	Torrance: Mountainair	Heavy	"	20 acres
	"	Moderate	"	20 acres
	"	Moderate	"	30 acres
	"	Moderate	"	10 acres
	September 16			
	Valencia: Grants	Moderate	"	60 acres
	September 17			
	Bernalillo: Albquerque	Moderate	"	5 acres
Powdery mildew	September 15			
	Torrance: Mountainair	Slight	"	20 acres
	"	Very slight	"	10 acres
CABBAGE	September 10			
Black leg	Otero: High Rolls	Very slight		4 acres
	Mountain Park	32%		1-1/2 A
	Cloudcroft	Very slight		2 acres
	"	10%		1 acre
	"	Slight		5 acres
Black rot	September 10			
	Otero: Cloudcroft	Very slight		5 acres

HOST Disease	Date County: Town	Damage	Type or Variety	Area or Number of Plants
CARROT Alternaria blight	September 10 Otero: Mayhill	Moderate		15 acres
CAULIFLOWER Black leg	September 10 Otero: Cloudcroft	Very slight		0.1 acre
CELERY Chlorosis and necrosis (undet.)	September 17 Bernalillo: Albuquerque	Slight		0.25 acre
Septoria apii	"	Moderate		0.25 acre
EGGPLANT Verticillium wilt	September 9 Dona Ana: Las Cruces	75%		6.5 acres
OKRA Root knot	"	60%		2 acres
PEPPER Wilt (Fusarium annuun)	September 7 Dona Ana: Hatch	25%	Chili	5 acres
	"	Slight	"	6 acres
	Garfield	Very slight	"	3 acres
	Sierra: Derry	Very slight	"	4 acres
	September 9 Dona Ana: Las Cruces	Very slight	"	30 acres
	September 14 "	Very slight	Bell	20 acres
	Roosevelt: Portales	15%	Bell	3/4 acre
	September 16 Socorro: Socorro	50%	Chili	0.2 acre
	September 17 Bernalillo: Albuquerque	33%	Bell	30 plants
Curly top (virus)	September 9 Dona Ana: Las Cruces	11%	Chili	30 acres
	"	7%	Bell	20 acres
	September 14 Roosevelt: Portales	Very slight	Bell	3/4 acre
	September 17 Bernalillo: Albuquerque	Very slight	Chili	1/2 acre
	"	75%	Bell	1/2 acre

PEPPER (cont.)				
Blossom-end rot	September 9 Dona Ana: Las Cruces	16%	Chili	30 acres
	September 16 Socorro: Socorro	Slight	Chili	0.2 acre
	September 17 Bernalillo: Albuquerque	Very slight	"	1/2 acre
Sun scald	September 9 Dona Ana: Las Cruces	Moderate	Bell	20 acres
	September 14 Roosevelt: Portales	25%	"	3/4 acre
PUMPKIN				
Powdery mildew	September 17 Bernalillo: Albuquerque	Slight		1 acre
Mosaic	" "	Slight		1 acre
WATERMELON				
Anthracnose	September 18 Rio Arriba: Espanola	Very slight		0.1 acre

(Wm. G. Hoyman, Emergency Plant Disease Prevention Project)

DISEASES OF FRUIT AND NUT CROPS

MAINE: Apple -- Apple scab (Venturia inaequalis) was found at Acton and Springvale. Infection was light in Acton and in one orchard at Springvale; but in another Springvale orchard scab was general and very severe. Leaves of McIntosh in this orchard were plastered with lesions and hardly a fruit escaped some infection. Red Delicious in this orchard was much less affected.

Fire blight (Erwinia amylovora) was rather prevalent in the Acton area, where it was causing slight to severe damage in several orchards. It was found on Early McIntosh, McIntosh, Golden Delicious, Macoun, and Cortland.

Other diseases observed were anthracnose (Neofabraea malicorticis), causing slight damage in local areas in one orchard at Limerick; frogeye (Physalospora obtusa), local with slight to moderate damage in one orchard in Acton; and quince rust (Gymnosporangium clavipes), local infections causing slight to moderate damage on Red Delicious in Springvale and Golden Delicious at Acton.

Blueberry -- Leaf rust (Pucciniastrum myrtilli) was general and severe in 7 fields in Franklin and 2 fields in Columbia. Localized slight infections of the witches'-broom rust (P. goeppertianum) were observed in one field in Columbia. Powdery mildew (Microsphaera alni var. vaccinii) was causing very slight damage in one field in Columbia.

Strawberry -- Leaf spot (Mycosphaerella fragariae) was general but unimportant in the field in Scarboro. (Robert C. Cassell, Emergency Plant Disease Prevention Project)

NEW HAMPSHIRE: Apple -- Scab is present in southern New Hampshire in about the same proportions as elsewhere in New England. On unsprayed trees the leaves are covered with scab lesions and the fruits are spotted and deformed by scab and by insect injuries. Red Delicious was very badly scabbed at Derry.

Russeting probably caused by spray injury was particularly noticeable on Baldwins over most of the area surveyed.

Peach -- Bacterial spot (Xanthomonas pruni) was general but slight in one orchard near Durham. There are no peach trees bearing fruit in New England this year because of the severe winter.

Grape -- Slight leaf spotting caused by the black rot fungus, Guignardia bidwellii, was general in Northwood.

Wild Cherry -- A few specimens of black knot (Dibotryon morbosum) were observed in Derry (Robert C. Cassell, Emergency Plant Disease Prevention Project, September 12 to 18)

VERMONT: Apple -- Scab was very severe in South Hero and Grand Isle. In spite of thorough spraying there was so much rain that protection could not be maintained. Fruit infection ranged from 3 to 35%, the average for the area being nearer the higher percentages, 25 to 30%.

Apple rust (Gymnosporangium juniperi-virginianae) was general in one South Hero orchard; the very slight infection affecting only the leaves. (Robert C. Cassell, Emergency Plant Disease Prevention Project. September 19 to 25)

MASSACHUSETTS: Apple -- Commercial losses due to scab were observed in McIntosh of traces to 25% for sprayed orchards in Hampden, Hampshire, Essex, Franklin, Berkshire and Middlesex Counties; 50-100% losses in unsprayed trees. Defoliation was practically complete on September 4 in an unsprayed McIntosh orchard in South Amherst. Late season infections were just showing up on McIntosh fruits in the vicinity of Amherst.

Light to heavy black rot leaf infections and an occasional infected fruit were observed on Baldwin and Cortland in South Amherst (September 4) even where scab was quite well controlled. Branch cankers also were common in Baldwin, and in Fall Pippin following fire blight.

Fire blight caused an occasional twig die-back in Rhode Island Greening and Baldwin, and numerous twig and limb cankers in Fall Pippin in South Amherst (September 4). Fire blight was scarce in apples and pears in other parts of the state this year.

Bitter pit (physiogenic) was just beginning to appear on Baldwin in one South Amherst orchard on September 4, also on McIntosh being harvested in one of the college orchards on September 20. Damage was very light in each case.

One severe case of cedar-apple rust was observed in northern Essex County (September 15).

No further development of bitter rot (Glomerella cingulata) since August 11 was observed on September 15 in the Bristol County orchard at Seekonk where Bordeau was used regularly beginning with the second cover spray.

In a Westport orchard, however, where very poorly executed programs of Fermate and of Bordeaux were used beginning with the second cover, Rhode Island Greenings showed about 50% loss compared with 75 to 80% loss in the same orchard last year under the usual sulfur spray program.

In the same Westport orchard, leaf spots caused by black pox (Helminthosporium papulosum) were numerous and fruit spots just beginning to show up in Northern Spy, infections being more or less alike in Fermate and Bordeaux sprayed trees. (Surveys made by Robert C. Cassell usually accompanied by E. F. Guba or O. C. Boyd or Thomas Sproston, Jr., and by the agricultural extension agents of the counties indicated; from August 25 to September 21, 1943. Summary by O. C. Boyd, Thomas Sproston, Jr., Massachusetts State College.

CONNECTICUT: Apple -- Scab was generally distributed in the State. One unsprayed McIntosh orchard in Hamden suffered 100% loss. Very little scab could be found, even on the leaves, in a very well cared for orchard in Farmington. (Robert C. Cassell, Emergency Plant Disease Prevention Project)

NEW YORK: August 23 to 31; The Greene-Columbia-Ulster-Duchess area

Apples -- Distribution of scab is general in this area and susceptible varieties are severely affected. Dr. D. H. Palmiter states that weather conditions have been more favorable for scab this year than they have been in the past 10 years. He estimates the loss in unsprayed McIntosh apples to be 100%, and 1 to 50% in sprayed trees with an average of 10% loss of total crop in this area.

Quince rust on apples is generally distributed and more destructive than in any year since 1937. Counts made by Dr. Palmiter show that 30% of the fruit on non-sprayed trees is infected. Even in sulfur sprayed trees infection ran as high as 10%.

Fire blight tended not to be widespread and severity in individual trees is low. Occasional orchards having had poor care were found to be destructively affected. Dr. Palmiter estimates the loss at less than 1%.

Black rot was generally distributed and caused some defoliation on susceptible varieties. Fruits of Cortland variety having quince rust frequently have black rot.

Cedar (apple) rust is generally distributed in this region, especially on susceptible varieties such as Rome and Wealthy. There is more fruit infection this year than last. Dr. Palmiter has found that as much as 50% of foliage and 15% of fruit has been lost this year in unsprayed trees. He has also found that the rust was not materially reduced by regular sulfur sprays unless a special bloom spray was applied.

Cherry -- Coccomyces leaf spot (C. niemalis) is generally distributed in this area on both sweet and sour varieties. Some unsprayed trees were completely defoliated by August 25 according to Dr. Palmiter.

Peach -- The yellow-red virosis (X - disease) is present in Columbia, Duchess, Putnam, Albany, Greene, and Ulster Counties. Many peach orchards located near choke cherry show X - disease prevalence running as high as 50 to 75% of the trees. Ten to 30% of the trees in peach orchards near choke cherries may become infected in a single year, according to Dr. Palmiter.

Pears -- Sooty blotch of pears (Gloeodes pomigena) was seen in one orchard. Fruit infection in this orchard was 100% in unsprayed trees.

Week ending September 18

Apple -- Dr. A. B. Burrell reports (August 28), "Scab in Clinton and Essex Counties will reduce the crop of U. S. Fancy and No. 1 apples by about 20 to 25% respectively. The work of sorting is greatly increased which intensifies the already prevalent labor shortage."

"Quince rust is especially prevalent and most severe on variety Delicious but common on Cortland and to a lesser extent on McIntosh. For Clinton county as a whole not over 2 to 4% of the fruits are affected by this disease."

Black rot and fire blight are reported to be unimportant in Clinton and Essex counties this year.

Blueberries -- Blueberries are becoming an increasingly important crop in New York State. Between 1930 and 1940, the acreage of cultivated blueberries and improved areas of wild blueberries has risen from 300 to 700.

The blueberry is subject to several destructive diseases. Dr. R. F. Suit of the Geneva Agricultural Experiment Station states that, (quote) "The stunt disease (cause believed to be undetermined) appears to be of special interest as it has become serious and indications are that this disease may become the limiting factor in the growing of cultivated varieties. In one planting of Rubel and Pioneer in Oswego County, 54% of the bushes are diseased. Bushes which become diseased produce poor fruit and usually die within 3 or 4 years. In another Oswego county planting, where investigations are in progress, the Pioneer variety is the most susceptible. In 1942, 23% of the bushes were diseased and on August 11, 1943, 51% were diseased. The stunt disease was moderate in the Concord and not as prevalent in the Rubel, Jersey and Rancocas. The percentage of stunt has increased in all varieties.

"The Pioneer variety shows more powdery mildew (Microsphaera alni var. vaccinii) and Phomopsis gall (Phytopath. 28:71-73. 1938) than the Concord, Rubel, Jersey, or Rancocas." (L. J. Tyler, Emergency Plant Disease Prevention Project)

NEW JERSEY: August 16 to 21, southern New Jersey in Salem, Cumberland, Cape May and the western part of Atlantic and Gloucester Counties; September 6 to 11, central New Jersey in Mercer and Hunterdon Counties.

Apple -- Scab was of minor importance in orchards visited in southern New Jersey. Commercial orchards were nearly all heavily coated with spray deposit. Bitter rot was observed to a mild extent in one orchard near Millville.

In Mercer County, the fruit in most sections was dropping early because of the drought. Scab infection was light to very light in all orchards properly sprayed. In one orchard in the Lawrenceville section which was interplanted with peach trees and had not received the regular apple scab sprays, Rome Beauty and McIntosh Seedling fruit were badly spotted and the leaves were severely scabbed.

Cedar-apple rust was noted on Rome Beauty, a moderate infection being observed on the leaves in one orchard, and considerable foliage infection and slight fruit infection in another.

Most of the fruits of McIntosh in one orchard were Coprosil was used showed severe basin spray burn with numerous smaller spray burn spots spreading toward the calyx end.

In the Allentown section of Mercer County apples were practically free from diseases.

In the Stockton section in Hunterdon County no scab was observed. York Imperial and Rome Beauty showed severe leaf infection by apple rust.

Peach -- Many peach orchards were visited in southern New Jersey during the third week of August. Brown rot (Monilinia fructicola) was observed only where the fruit had been injured by oriental peach moth larvae, etc. Scab (Cladosporium carpophilum) was not evident to any extent.

Bacterial spot (Xanthomonas pruni) infection was extensive in the Cedarville, Vineland, and Hammonton areas. Golden Jubilee and Belle were practically free from bacterial spot; Hiley, Slappey, Raritan Rose were slightly affected; while J. H. Hale, Elberta, Goldeneast, Summercrest, and Halehaven were severely attacked. In 3 orchards, 1 each at Fairton, Millville, and East Vineland, careful observations were made of the degree of infection on leaves and fruit, with the following results:

Variety	Degree of Infection					
	Fairton		Millville		East Vineland	
	Fruit	Leaves	Fruit	Leaves	Fruit	Leaves
Belle	None	None	Very Slight	None	None	None
Brackett					Severe	Moderate
Eclipse					Moderate	Slight
Elberta	Slight	Slight	Slight	Slight	Severe	Severe
Goldeneast (87)	Moderate	Slight	Moderate	Slight	Severe	"
Halehaven	Slight	Slight	Moderate		"	"
Hiley					Very slight	Very slight
J. H. Hale	Severe	Severe	Moderate	Slight	Severe	Severe
Golden Jubilee	None	None	None	None	None	None
New Day (79)	Slight	Slight				
Raritan Rose	None	None				
Rio Oso Gem			Moderate	Severe		
Summercrest (94)	Severe	Severe	Very Slight	Very slight	Moderate	Severe
White Hale	None	None				

Some of the growers believed that initial infection of bacterial spot may have been introduced into their orchards with nursery trees. I examined seedling and budded peach stock in a nursery at Millville, but found no bacterial spot. The varieties examined were Belle, Brackett, Cumberland, Early Elberta, Eclipse, Elberta, Goldeneast, Goldenglobe, Golden Jubilee, Halehaven, J. H. Hale, New Day #86, New Jersey #117, Raritan Rose, Summercrest #94, Sunhigh. and Triogem.

The Raritan Rose trees in the Fairton orchard had split at the crown during the winter of 1942-43, and a bolt had been put through the crown of each tree to prevent further splitting.

Crop and trees in the Trenton area of Mercer County during the second week of September were suffering less severely from drought than in the Hammonton area of southern New Jersey several weeks earlier. Brown rot was present but only to a slight extent and had caused little commercial damage. Scab was seldom observed in sprayed orchards. Bacterial spot occurred but not in all orchards. Little peach (virus) was found in several orchards.

In the Lawrenceville section the only disease found in one orchard was little peach, on several trees; another orchard was free from diseases. Three orchards in the Hopewell-Rosedale section were also disease-free; in another 7 trees showed little peach symptoms, and brown rot was severe on all varieties owing to lack of spraying.

In one orchard in the Allentown section bacterial spot was very severe on old and young trees. Careful observations showed the following varietal reactions:

Variety	Amount of Infection	
	On Leaves	On Fruit
White Hale	Severe	Moderate
Elberta	Moderate	Fruit picked
Summercrest	Slight to moderate	" "
Triogem	Moderate	" "
Goldenglobe #73	Moderate	" "
Goldeneast #87	Slight	" "
Goldenglow #84	Severe	Moderate
Pacemaker #99	Severe	Fruit picked
#109 (white)	Very slight	None

At another orchard in this section no bacterial spot was seen on White Hale fruit being graded, and the owner reported that his orchard had not been affected by any disease this year.

In an orchard near Robbinsville no bacterial spot was seen but scab was severe on the fruit of Lizzie and slight on White Hale.

In Hunterdon County in an orchard near Stockton, brown rot was severe on the fruit of Duke of York, while Afterglow and J. H. Hale were only slightly affected. No bacterial spot was observed. In the Flemington area the peach crop was very light and no diseases were observed. (E. A. Walker, Emergency Plant Disease Prevention Project).

PENNSYLVANIA: Collaborator for the week ending September 4 was Dr. R. S. Kirby of Pennsylvania State College. During the period September 6 to 11 collaborators were Dr. Kirby, and Dr. F. H. Lewis of Pennsylvania State College; also the county agents rendered valuable aid. The counties visited are in the southeastern quarter of the State.

Apple -- Scab was very severe in an orchard near Souderton, and very severe on Rome Beauty apples near Norristown. Some of the early critical spray applications were missed in these orchards. Black pox (caused by Helminthosporium papulosum) was noted in the latter orchard. Black rot was present to the extent of scarcely a trace in the orchards visited. (Montgomery County, September 1)

In Bucks County (September 2), scab, apple rust, quince rust, and fruit spot (Mycosphaerella pomi) were each present to the extent of a trace in an orchard near Buckingham. The orchard had received the recommended spray applications.

In Adams County, scab infection was moderate on unprotected trees in almost all orchards visited in the vicinity of Biglerville. Infection was light in trees carefully sprayed. Cedar-apple rust was severe in unprotected trees in this locality while sprayed trees exhibited only slight infection. Black pox was noted in a few orchards. (September 6)

Five to 10% of the fruit in some trees of 2 orchards near Scotland, Franklin County, were scabby, while apple rust was very slight in all trees examined. (September 7)

Near Palmyra in Lebanon County, scab was present to the extent of a trace, but black rot was severe, probably because of the high prevalence of insect injury to the fruit. Apple rust was present to the extent of a trace on the leaves. (September 9)

With Dr. R. S. Kirby, scab counts were made in several orchards in the vicinity of Allentown, Lehigh County. In orchards that had received the complete and recommended spray schedule, scab fruits were present to the extent of from 0.4 to 2%. In one orchard scabbed fruits ran as high as 15% but inquiry revealed that the spray method was not thorough.

In other orchards that had received some but not all of the recommended sprays, and in addition where it was obvious that spraying was not thoroughly done, scabbed fruits varied from 8 to 43% in different orchards.

Sooty blotch (Gloeodes pomigena), fruit spot, black rot, black pox, and apple rust were present to the extent of traces, especially in orchards that had received but a part of the sprays. (September 10)

Peach -- Brown rot was present to the extent of 15 to 25% on peaches in one orchard near Souderton in Montgomery County. Peach yellows (virus) was observed on 17 to 120 trees in the same orchard. A bare trace of scab also was observed (September 1).

A light attack of brown rot and a moderate amount of scab were observed in an orchard near Lancaster, Lancaster County (September 3).

Brown rot was present on 5 to 10% of the fruits in some orchards near Biglerville, Adams County. Scab was not seen in this locality (September 6).

In Franklin County, brown rot was present to the extent of a trace near Scotland, while infection was light near St. Thomas. Scab was slight on early varieties (according to growers) and light to moderate on the late varieties at both places (September 7).

According to a grower near Carlisle in Cumberland County, brown rot attack on the fruit of different varieties was as follows: Golden Jubilee and Hiley, 0.5%; Belle, 1 to 2%; Elberta, 1%; J. H. Hale, 3 to 5%. Scab was present to the extent of only 0.5% in Elberta peaches and even less in the other varieties. (September 8).

Near Palmyra in Lebanon County, brown rot was evident on about 3% of the fruits of late varieties. A grower between Lebanon and Jamestown estimated that brown rot had destroyed from 6 to 8% of J. H. Hale fruit, 4 to 5% of Elberta, and 1 to 3% of Belle. (September 9)

In Berks County a grower near Robesonia estimated that brown rot had destroyed less than 1% of the fruit of the different varieties grown by him. (September 9)

Brown rot was very slight in one large orchard visited near Allentown in Lehigh County, September 10.

Nectarine -- Brown rot (Monilinia fructicola) and scab (Cladosporium carpophilum) were moderately severe on the fruits on all trees in an orchard near Carlisle, Cumberland County. Considerable damage to the trees was also evident. (September 8)

Grape -- A vineyard near Idaville, Adams County, showed traces of downy mildew (Plasmopara viticola) on most vines, and slight amounts of black rot on 10% of the bunches. (September 6)

In a vineyard north of Palmyra in Lebanon County, a scant trace of downy mildew occurred on 50% of the vines, black rot affected 1% of the bunches, and ripe rot (Glomerella cingulate) less than 1% of the bunches. (September 9)

Downy mildew was light on 25% of the vines in a vineyard near Allentown, in Lehigh County (September 10). (L. J. Tyler, Emergency Plant Disease Prevention Project)

DELAWARE: August 23 to 27, Newcastle and Kent Counties. Drought conditions were severe; but the fruit trees had not been injured. Most of the peach and apple crop was destroyed by freezing during blossom. In a neglected orchard in Kent County apple trees were in full bloom.

Apple -- Severe scab was observed on leaves of Stayman Winesap on low ground near Glasgow, Newcastle County. There was no scab on the fruit and no other diseases were noted in this orchard.

In an orchard in Newcastle County near Cheswold the crop was light and the fruit was clean and well colored with no scab, black rot, nor blotch (Phyllosticta solitaria). Some bitter rot (Glomerella cingulata) occurred on the Stark variety, about 5%. An orchard with no fruit near Wyoming was free from leaf diseases.

Peach -- The peach crop in Kent County was very light owing to the freeze at blossoming time. An orchard near Cheswold showed slight spray injury to the foliage, and leaf drop. Neither bacterial spot nor scab were seen in this orchard. Brown rot fruit infection was slight, but there was some evidence of twig blight.

In an orchard east of Dover there was slight to moderate brown rot fruit infection and some twig blight. The J. H. Hale variety with 2 to 5% was most conspicuously affected by brown rot. Bacterial spot did not occur on Golden Jubilee nor Belle. It was severe on the fruit of Elberta, J. H. Hale, and Shippers' Late; leaf infection was slight on Elberta and J. H. Hale and severe on Shippers' Late.

An orchard near Wyoming with no fruit production showed no leaf diseases. (E. A. Walker, Emergency Plant Disease Prevention Project)

MARYLAND: Apple -- In Harford County in northeastern Maryland apple orchards receiving regular sprays were practically free from scab, blotch, black rot, bitter rot, and fruit spot (August 23 to 28).

In an orchard near Ellicott City in Howard County, Stayman Winesap, Delicious, and Black Twig [Arkansas Black] were practically free from scab. Large bitter rot spots were developing on the fruit on some Grimes Golden trees from initial infection occurring during late June. Spraying with Bordeaux 8-8-100 July 1 and 15 kept the disease from spreading but some of the spots had enlarged under the heavy spray covering during the hot dry weather of August. About 10% of the Grimes

apples were affected. On Smokehouse trees about 30% of the fruit was affected (August 16 to 21).

In an orchard in the Sandy Springs area in Montgomery County, Red [Streaked] Pippin showed 100% water core (non-parasitic); Wealthy was severely affected by fire blight; Grimes Golden showed 5% black rot; bitter pit and apple scab were not observed. In another orchard Maiden Blush showed 2% bitter rot, but no other diseases were observed. (August 30 to September 4)

Apple trees in Frederick County were suffering severely from drought. Some trees on high ground were dying, and most trees were dropping their fruit before it had colored. The most severely affected variety was York Imperial; Delicious was only slightly affected. In an orchard in the Frederick area 60% of the leaves of York Imperial showed one to several spots caused by apple-cedar rust, while about 1% of the fruit was infected; about 40% of the leaves were affected by black rot leaf spot; and diffuse scab spots were beginning to appear on the under side of the younger leaves. About 5% of the York Imperial fruit was injured by spray burn. No scab was noticed on Delicious. A slight amount of fire blight occurred on Jonathan. In another orchard, drought was causing premature fruit drop from Winter Banana trees. Fruit was very small and poorly colored, but the trees were not injured except for some leaf dropping. Apple rust was severe on Jonathan leaves; 2% bitter rot was observed on Winter Banana fruit. There was a slight amount of fruit russeting and spray burn on the leaves. No fire blight or scab was noted in this orchard. (August 30 to September 4)

In Washington County, no fruit or leaf diseases were observed in an orchard near Boonsboro containing Stayman Winesap, Delicious, and Golden Delicious varieties. Apple rust was present but not severe in the Smithsburg area; other diseases were not observed there. In the Hancock area neither scab, nor blotch, was seen. Apple rust was severe on leaves of the York Imperial variety, 60 to 70% of the leaves showing 1 or more spots; but the fruit showed less than 1% infection. Calyx-end spray injury occurred rather generally on the Gano variety throughout the area. Black rot (frog-eye) leaf spot was severe on most varieties in one orchard, where it was most prevalent on Yellow Transparent, Northwestern Greening, and Winter Banana. A slight amount of bitter rot, up to 1%, was observed on Winter Banana. In another orchard Rome Beauty fruit was moderately affected by black pox (Helminthosporium papulosum), and the twigs showed severe injury resembling measles. (August 30 to September 4).

Peach -- In Harford County, brown rot was slight in 3 orchards visited; weak trees in one showed 50% bacterial spot; several trees in another were affected by little peach (August 16 to 21). In the Havre de Grace section of Harford County, orchards were free from bacterial spot, scab, and yellows. A very small amount of brown rot was observed most abundantly on the J. H. Hale variety. In the vicinity of Churchtown one orchard showed severe leaf drop, with marginal leaf burning, and some shot-hole, due partly to spray burn and drought, and partly to scab; this injury was most pronounced on trees of low vigor. Winter injury from the winter of 1936-37 was severe on old trees in this orchard, resulting in an extreme amount of breaking of fruit-loaded branches. Scab was not observed on the fruit, which was small, mostly 1-3/4 inch in

size, and showed about 10% sunburn injury. In the vicinity of Darlington fruit was small and practically free from disease (August 23 to 28). Further observations were made on bacterial spot in the orchard near Norrisville reported previously (PDR Aug. 15, p. 293): on J. H. Hale there was severe secondary fruit infection and light leaf spotting; on Elberta light to moderate infection on both leaves and fruit; on White Hale severe fruit infection and moderate leaf spotting; on Libbee very slight fruit and no leaf infection; on Champion very severe leaf spotting with heavy defoliation and moderate fruit spotting with small lesions showing cracking, which is the normal type of fruit lesion caused by this disease in Maryland (September 6 to 11).

In an orchard near Colora in Cecil County all varieties were free from brown rot, yellows, and bacterial spot. Spray burn was severe on Late Salwey and Krummel; it was caused when sprays were applied in hot weather. Damage was noted to the extent of 5% fruit burn and 80% leaf injury, and about 60% of the leaves had already fallen off (August 16 to 21). In a small orchard near Nottingham scab was severe; about 80% of the fruit was affected with severe cracking, and nearly 100% of the older leaves showed scab leaf spot and shot hole. Spray injury was causing severe marginal leaf burning and considerable leaf drop (August 23 to 28).

In Montgomery County, in the Sandy Springs area, the crop was very light owing to frost at blossom time. In one orchard trees were suffering from drought which had caused about 50% defoliation; no diseases were observed in this orchard. In another orchard no bacterial spot or scab occurred and only a very light attack of brown rot. Most of the young trees, 4-to 5-years old, in this orchard were severely affected by constriction disease (Phomopsis persicae), which was most destructive on the 1941 growth. Some fresh cankers were developing this season. The crop was light in an orchard near Poolesville. The J. H. Hale variety was severely affected by brown rot, following insect injury. A slight amount of scab also was observed in this orchard (August 30 to September 4).

No diseases causing damage to fruit or foliage were observed in the Frederick area of Frederick County, where the peach crop was light. In the vicinity of Emmittsburg the only disease observed was a very slight amount of brown rot. Some trees on light soils were dying from drought injury. A considerable amount of "cat-facing" caused by tarnished plant bug or stink bug injury was observed in 2 orchards (August 30 to September 4).

Orchards in the Keedysville, Boonesboro, and Mapleville sections of Washington County were free from bacterial spot, scab, and yellows (virus). A slight amount of brown rot was observed in all orchards. A peculiar "cat-facing" was observed on fruits from trees near wooded areas and in neglected fence rows. The injury was of recent origin and possibly was due to activity of the stink bug. In the Smithsburg area brown rot was not a problem. In one orchard what was apparently the red suture disease (virus) affected some trees. Bacterial spot was very severe in this orchard. Earliest infection this year was observed on Late Elberta. The disease was very severe on both leaves and fruit of Late Elberta; severe on fruit of Goldeneast, Summercrest, J. H. Hale, Sunhigh, Goldenglobe, and Rio Oso Gem; severe on leaves of Rio Oso Gem, J. H. Hale, and Elberta. An unnamed variety of excellent quality, bred

by University of Maryland horticulturists, showed severe, as much as 70% fruit spot and severe leaf spot. Roberta also showed 70% fruit spot. Varieties not affected this year were Belle, Golden Jubilee, and Salwey. Bacterial spot was reported to occur in several other orchards in this vicinity, near the Pennsylvania line. No bacterial spot or scab was observed or reported in the Hancock area and brown rot was not causing commercial loss there. Cat-facing was evident in some areas of most orchards. The constriction disease was observed in one orchard where it caused considerable damage to the 1942 growth. This year's wood is not affected (August 30 to September 4).

The peach crop was very light in the Westminster area of Carroll County. One orchard showed a slight amount of brown rot, and bacterial spot affected some varieties. On Elberta over 50% of the fruit was spotted, and leaf spot and defoliation was severe. Lighter infections were observed on Halehaven, J. H. Hale, Brackett, and Early Elberta. No fruit spotting was noted on Golden Jubilee, Belle, Hiley, or Southhaven. In general, leaves were lightly attacked, while fruit was heavily spotted. Severe spray injury was noted on leaves (August 30 to September 4). (E. A. Walker, Emergency Plant Disease Prevention Project)

VIRGINIA AND WEST VIRGINIA: August 8 to 14.

Apple -- In one large orchard (1100 acres) near Charlestown, West Virginia, 600 trees had been pulled as the result of a canker at and below the ground level. Many other trees showed symptoms. Similar symptoms were evident in a block of about 10,000 trees of about the same age in the Romney area, where several hundred trees were dead. The causal agent was suspected to be Phytophthora cactorum. Preliminary isolations by Dr. A. B. Groves and the writer had failed to yield any logical organism, up to the time of this report.

Peach -- Peaches in the Timberville and Winchester, Virginia, and Jefferson County, West Virginia, area showed no brown rot other than a few peaches infected at points of entry of the Oriental peach moth. Even in unsprayed orchards brown rot was negligible. This was in areas where drought was causing a marked reduction in the size of fruit. Peach yellows was seen in low amounts in several orchards, apparently being no more prevalent than during the past few years in this region. As usual, it was very abundant in home plantings in villages.

Nectarine -- The one nectarine tree seen showed definite yellows symptoms.

August 21 to September 4, from Fredericksburg, Virginia, through Winchester and eastern West Virginia to Morgantown.

Apple -- Fruit rots were rare. Leaf and fruit scab was common in orchards where the petal-fall spray was delayed by wet weather. Apple rust was severe on the leaves in many orchards. In one orchard fruit infection on Rome Beauty was about 0.5% of the fruit affected; the disease was much less common on adjacent York Imperial. State quarantine officials are anticipating considerable activity in cedar removal this coming winter.

In one orchard a time lapse of approximately 4 days at each application between the spraying of the two ends of certain rows of York Imperial led

to a marked difference in a leaf burn that was evidently due to arsenical injury. Determination of the cause of this burning is complicated by the fact that the earlier application controlled cedar rust, while on trees sprayed later there were from 5 to 15 rust lesions per leaf. Much, although not all, of the burning was initiated in these lesions. Defoliation amounted to nearly 95%. The amount of rust present should not have caused defoliation at this time. Very little leaf injury occurred on the trees sprayed first.

Peach -- The Elberta peach harvest had been completed. Because of the dry weather prevailing brown rot was not a factor in production; very few affected fruits having been found even in unsprayed orchards. Peach scab was not seen.

September 6 to 11, northern panhandle of West Virginia, from Moundsville to Chester along the Ohio River.

Apple -- Scab was very poorly controlled in some orchards in this section. In several orchards that had received 2 or 3 applications timed by convenience and applied sparingly, scab had affected from 50 to 100% of the fruit on such varieties as Winter Banana, Delicious, Stayman Winesap, and Rome Beauty. In several of these orchards most of the fruit had fallen because of scab, and the apples remaining were badly distorted. In some varieties the disease had caused severe defoliation. Fruit infection had been reduced to 1% or even less on Delicious in a few orchards.

Bitter rot was found in a very few orchards, occurring in measurable amounts in only one where about 2% was noted on fruits of Winter Banana and Golden Delicious.

Leaf infection by cedar rust was found on a few apple trees near a cedar nursery in which rust galls had sporulated during the spring. The owner plans to pick the galls in the future.

In one orchard approximately 50% of Delicious and 30% of Stayman Winesap fruit was affected by bitter pit (Physiogenic). Very little was seen in any other orchard.

Measles (internal bark necrosis) was found on a few Delicious trees in one orchard. Alleged measles on about 40 4-year old Delicious trees in a block of 150 proved to be injury caused by the buffalo treehopper.

Peach -- Eleven in one block of 56 trees were affected by peach yellows. Occasional infected trees were found in other orchards; no trees were infected in many orchards. Bacterial spot was severe in one young orchard. Severe defoliation in one part of this orchard appeared to be more closely correlated with fertilizer competition from interplanted strawberries than with bacterial spot. Brown rot was reported to have been slight on the very light crop.

Almond -- One almond tree was seen; it showed definite symptoms of peach yellows.

Cherry -- Leaf spot (Coccomyces hiemalis) had caused more than 90% defoliation on most sour cherry trees seen.

Grape -- Black rot had destroyed from 65 to 80%, averaging 75%, of the fruit. Downy mildew was prevalent and had caused some defoliation on all grapes examined. Powdery mildew (Uncinula necator) was present as a trace on the lower leaves in one vineyard. No sprayed grapes were seen.

September 13 to 18, southern West Virginia and western Virginia.

Grape -- Black rot and downy mildew were prevalent throughout the area visited.

September 19 to 25 was spent in the Shenandoah Valley, principally on a survey of young, 4- to 8-year-old, apple orchards. One day was spent in company with Dr. A. B. Groves on a trip through the Luray and Timbefville sections of Virginia, and on another day Mr. E. C. Sherwood joined in visiting orchards in the Charlestown area of West Virginia.

Apple -- In young orchards dead trees were examined to determine the cause of tree death. In 7 orchards only 1 probable case of killing by Phytophthora cactorum was located. This 1 tree was in an orchard near where this organism was identified by Dr. A. B. Groves as the cause of death of some 500 6-year-old trees earlier this season (see above, August 8 to 14). The other dead trees examined had been killed in about equal numbers by Xylaria mali and by mouse girdling. One tree apparently had been killed by white root rot (Corticium galactinum) in an experimental orchard in Luray, Virginia, where this organism had previously killed apple trees.

In a mixed peach and apple orchard at Timberville, bitter rot had destroyed approximately 10% of a crop of Grimes Golden apples. This attack was traceable to the close interplanting with peaches which makes thorough application of copper sprays unsafe. With the conditions existing here one could expect a much higher loss in a year of normal moisture. Under the prevailing drought conditions bitter rot is extremely rare in the Shenandoah Valley this year, this orchard being the one known case of measurable loss.

Peach -- Yellows-infected trees were rare in commercial orchards, much more prevalent in neglected orchards. Death of trees in one 4-year-old orchard appeared to be due to injury from ethylene dichloride emulsion said by the orchard foreman to have been applied to the tree trunks in 1941. In this orchard of 2900 trees, 600 trees were dead, mostly in about 1200 trees at one end of the orchard. A dead 2-year-old tree in an adjacent block had been attacked by crown gall (Agrobacterium tumefaciens). (C. F. Taylor, Emergency Plant Disease Prevention Project)

KENTUCKY AND TENNESSEE: Mr. A. N. Pratt, State Horticulturist at Nashville, reviews the apple disease situation in Tennessee as follows:

"Fortunately, no one disease was epidemic this year. I say 'fortunately' because most growers, including some of the best in the State, were completely fooled on the crop prospect, and either omitted or slighted early spraying. The fact that the pink application was made before the serious killing frost during bloom, and that it coincided with the major, primary discharge of scab spores, evidently prevented any material loss from this disease. When I found sooty blotch throughout the orchard of one of our best growers, I learned that he had done only sketchy post-bloom spraying, believing that the crop was gone or seriously cut.

"If any one disease could be considered more serious than any other, it would be black rot, i. e., the leaf infection, frog-eye leaf spot. It is likely that this disease also developed in the early post-bloom period when crop prospects were so much in doubt.

"Bitter rot was not serious this year in any of the orchards that I visited, except for one or two that had not been sprayed properly, either this year or last.

"Occasionally I run across an orchard with serious cedar rust infection, especially on Golden Delicious."

August 23 to 28, across southern Tennessee and up the western end of the State. Most of the area covered was, and had been for some time, extremely dry. Many of the apples were half the normal size.

Apple -- In a Hardeman County orchard 4% of Starking (?) fruit was affected by external cork. Black rot was general throughout this orchard, frequently following codling moth injuries which were numerous. Considerable black rot occurred in a Madison County orchard. No bitter rot was observed in either of these orchards. No diseases were seen in a Weakley County orchard.

Peach -- In one large Roane County orchard, 13% of the trees were dead or dying from an unknown cause. In an orchard in Hardeman County all the crop had been frozen; the loss was estimated at $1000.

August 30 to September 3, in southwestern Kentucky, along the Ohio River to Louisville, then over to Lexington. Severe drought conditions were encountered until Louisville was reached, where a current rainfall occurred.

Apple -- In a 15-year-old small orchard in McCracken County, 112 trees remained of an original 150. The orchard was sprayed once this year, during petal fall. Scab was severe on 100% of the fruit of the "Paducs" (=?) variety; severe also on Rome Beauty. Bitter rot was severe on Jonathan, and occurred also on Delicious. Black rot, sooty blotch (Gloeodes pomigena), and fly speck (Leptothyrium pomi) were present.

A large orchard in Union County was nearly disease-free but showed considerable spray injury to the leaves.

In one Henderson County orchard bitter rot was abundant on Grimes Golden, occurred on Ben Davis, and was much less frequent on Winesap. A copper spray was not used until bitter rot had appeared, and then "it kept on coming." Black rot was common. Another, large, orchard in this county was nearly disease-free, showing only a trace of bitter rot on Grimes Golden, a slight amount of black rot, and a trace of scab. Only a small amount of spray injury had occurred.

A Jefferson County orchard was nearly disease-free.

In Shelby County, in a 5-acre orchard sprayed 4 or 5 times, scab was severe on Grimes Golden with 70 to 80% of the fruit scabbed on some trees, and light on Delicious. A trace of bitter rot was noted on Golden Delicious. Black rot of fruit and frog-eye leaf spot were general in the orchard. In a large orchard in Shelby County scab was a serious problem. From 80 to 90% of the fruit of Delicious was affected; scab was severe on Wealthy and King David, but less common on Grimes Golden. Black rot was common, especially following the frequent codling moth injuries. There was a trace of bitter rot.

September 14 to 18, eastern Tennessee

Apple -- In a Hamblen County orchard the crop was estimated at only

25% of normal. Present were small amounts of scab, bitter rot, black rot, apple rust, also quince rust (Gymnosporangium clavipes) on the fruit. Frog-eye was general on the leaves.

A Greene County orchard had only a very small crop, all harvested.

In an orchard in Sullivan County, scab was severe; bitter rot was severe on susceptible varieties; frog-eye was very general and severe on the foliage. Sooty blotch, fly speck, and black rot were also present.

A Johnson County orchard had less than 10% of a crop. Cedar rust was common on Rome Beauty fruit, and rather severe on the leaves. Small amounts of scab and frog-eye were observed. Bitter pit (?) was common on Double Red York.

A Cocke County orchard yielded 500 bushels on 65 acres. Bitter rot occurred on Golden Delicious.

In a Jefferson County orchard there was a small amount of bitter rot on both Golden Delicious and Delicious. A considerable amount of quince rust was noted on Delicious, and some on Golden Delicious. Bitter pit was observed on Delicious.

A Knox County orchard had a clean, well-sprayed crop, with considerable spray injury to the leaves.

September 21 to 25, from near Columbia, Tennessee, through Nashville, Tennessee, Hopkinsville, Princeton, and to Henderson County, Kentucky.

Apple -- One day each was spent with Mr. A. N. Pratt, State Horticulturist, Nashville, Tennessee, and Mr. W. D. Armstrong, Horticulturist, West Kentucky Experiment Station, Princeton, and much information was obtained from both.

Very little scab was seen in an orchard near Santa Fe, none in 2 orchards near Columbia and 1 near Goodlettsville, Tennessee. The disease was general in an orchard at Hopkinsville, Kentucky; was severe on some varieties (Arkansas Black, Stayman Winesap, Winesap, Jonathan) at Clay, Kentucky; only traces occurred at Robards and none was seen at Princeton, Kentucky.

In general it was a bad scab year in Kentucky but scab was fairly well controlled in well-sprayed orchards. In other orchards apple scab and the codling moth "didn't leave enough apples for the second brood of codling moth."

No bitter rot was seen in an orchard at Santa Fe and another at Columbia; it was severe on Grimes Golden in a second orchard near Columbia; none was seen at Goodlettsville, Tennessee. In Kentucky, it was severe on King David and Ben Davis and mild on Delicious at Hopkinsville; none was noted at Princeton; it was general on Golden Delicious and Jonathan at Clay, and severe on Kentucky Winesap at Robards.

This year diseases, particularly bitter rot, have been a major factor in fruit production of the Grimes Golden and Golden Delicious varieties in Kentucky. The variety King David has nearly been eliminated in Kentucky by bitter rot.

Blotch (Phyllosticta solitaria) was not seen at Santa Fe, in 2 orchards at Columbia, nor in one orchard at Goodlettsville, Tennessee. At Hopkinsville, Kentucky, blotch was very general on Grimes Golden, causing cankers on the limbs, and was observed on Kentucky Winesap, Mammoth Black Twig [= Arkansas], and Stayman Winesap. It did not occur at

Princeton. It was severe on Arkansas Black at Clay and Robards and some occurred on Winesap at the former place. Blotch was present on Golden Delicious this year.

Sooty blotch and fly speck were common at Santa Fe, Tennessee, and were seen elsewhere. They occurred where some sprays were omitted because of the prospects of a crop failure or for some other reason.

Black rot of the fruit ranged from traces to considerable amounts. Frog-eye on the leaves was important.

Quince rust was found to be generally present over the area visited but usually occurred in small amounts.

Arsenical injury to the calyx end of the fruit was light but general at Robards, Kentucky.

Peach -- Bacterial leaf spot was general in occurrence at Goodlettsville, Tennessee. Only about 5% of the normal crop was produced at Princeton, Kentucky. (R. A. Hyre, Emergency Plant Disease Prevention Project)

FLORIDA: Apple -- Leaf spot caused by Pestalotia sp. occurred on a single small tree about 5 miles north of Milton, Santa Rosa County. The spots were small, however, and there was no appreciable damage. (September)

Peach -- Two recently dead trees in a small, mixed family orchard 3 miles west of Marianna were found to have succumbed to mushroom root rot (Clitocybe tabescens). (September)

Muscadine grape (Vitis rotundifolia) -- Leaf spots caused by both Phyllosticta viticola, the conidial stage of the black rot fungus, and Septoria ampelina, occurred abundantly on wild vines in a bit of woods adjoining the North Florida Experiment Station at Quincy. A large leaf blotch caused by an as yet unidentified Sphaeronema-like fungus was collected between Bristol and Telogia in Liberty County. This disease appears to have been overlooked previously in Florida, although the writer had seen it in other years without examining it. Globular, glistening masses of spores developed abundantly from the ends of the long, dark-brown, bristle-like pycnidia in moist chambers. (September)

Black mulberry -- Leaf spot (Cercosporella mori) was causing severe defoliation on trees at both Gainesville (Alachua County) and Greenville (Madison County). (September)

Satsuma orange - Two small plantings of Satsuma oranges were examined but very little disease was found. One exceptionally fine planting at Capps showed merely a trace of citrus scab (Elsinoë fawcetti) on the fruit, and a smaller and less well-cared for planting at Monticello showed only a small amount of fruit infected by scab and a little melanose (Diaporthe citri). Cold injury has recently proved to be a serious factor in curtailing Satsuma plantings in West Florida (August)

Pecan -- Scab (Cladosporium effusum) was of widespread occurrence on various varieties, including Mahan and Moore at Monticello, and was causing considerable dropping of developing nuts. Tabulations by the Pecan Laboratory at Monticello of the nut droppage on a medium-size Mahan tree showed loss of a pound a week. With this loss continuing for several weeks during the summer a large proportion of the crop would be lost from scab. The disease also was observed to be causing a heavy dropping of the Schley variety at Newberry.

Powdery mildew (Microsphaera alni) was found attacking a few nuts in 2 pecan orchards at Monticello.

Downy spot (Cercosporella caryigena, the conidial stage of Mycosphaerella caryigena) occured to some extent on the foliage of pecan trees at Monticello.

Pestalotia uvicola was associated with large irregular dead areas on leaves of trees in one orchard at Monticello.

Nursery blight (Elsionë randii) was of common and widespread occurrence in pecan nurseries at Monticello, causing extensive defoliation and a ragged, unsightly appearance of the trees.

Mistletoe (Phoradendron flavescens) occurred in a number of old, neglected pecan trees at Monticello (August).

Tungoil -- Diseases of this orchard crop are reported in a separate note. (Arthur S. Rhoads, Emergency Plant Disease Prevention Project)

MISSISSIPPI: Pecan -- During the period from September 13 to 18, a survey was made of the commercial pecan growing area of the Mississippi Gulf Coast. Pecan diseases are causing less loss this year than for the past several years. Scab, which causes severe losses almost every year, is relatively light this year, probably owing to the light rainfall during May, June, July, and August. Very little scab was found on the leaves of even the most susceptible varieties. Schley, which is the most susceptible variety, had only light to moderate amounts, and Success which is also very susceptible in most years was, on the whole, relatively free this year. In some groves some of the lower nuts were heavily scabbed, with a loss estimated at 5% of the crop. One grower estimated his crop at 6000 pounds of Success nuts this year, while last year in the same grove the crop was a total loss from scab. No scab was found on the nuts of the Stuart variety. A few Lewis trees were seen and this variety was also free from scab. Some seedling trees were scab-free, and some were lightly to moderately attacked.

Vein spot (Gnomonia nerviseda) was observed on the Stuart variety but was not severe.

Pear -- Two leaf spots were found on pear trees. The early leaf spot caused by Fabraea maculata [leaf blight] was most prevalent and severe. One grower who has 260 pear trees interplanted in a young pecan grove says that he has never harvested any pears because of continuous defoliation of the trees by this disease. Many of these trees are 15 to 20 feet tall. The grower intends to remove them. Leaf blight was found generally throughout the Mississippi Coast area. Cercospora minima was also found but not nearly so prevalent as the Fabraea blight. The Cercospora leaf spot occurs later in the season and usually causes only little damage.

Tungoil (Aleurites fordii) -- (August 29 to September 4, southeastern Mississippi). In a tung tree nursery large dead areas were present on the lower 3 to 6 leaves of the trees. Platings from these areas gave Rhizocotonia microsclerotia. On many of the tung seedlings, 4- to 6-feet high, the lower 2 to 5 leaves had fallen because of this leaf infection. (L. H. Person, Emergency Plant Disease Prevention Project)

LOUISIANA: Pecan -- One orchard of Stuart pecans was examined in St. Landry Parish. Brown leaf spot, Cercospora fusca, was heavy on all

trees. (L. H. Person, Emergency Plant Disease Prevention Project. September 6 to 11).

TEXAS: Fig -- Several large commercial fig orchards were visited in Brazoria, Galveston, and Harris Counties. Rust (Physopella fici) was present on most of the leaves of nearly every tree examined. It seems likely that fall pickings will be considerably reduced by impaired foliage functioning. In only one orchard had any apparent effort been made to control the disease by fungicides. (September 11)

Plum -- During the week ending September 18, near Poteet in Atascosa County, a large orchard of apparently mixed varieties was observed that showed generally distributed but mild foliage lesions caused by Xanthomonas pruni. The occasional limb and trunk cankers could have been caused by the same organism.

Pear -- Mixed in among the plums were ocassional pear trees that showed some loss of wood this season from fire blight. (G. M. Watkins, Emergency Plant Disease Prevention Project)

OKLAHOMA: Apple -- Most of the diseases commonly reported on apple were observed in the 135 acres surveyed.

Blotch was very serious in orchards near Durant and Wynnewood. In an orchard south of Wynnewood several trees had died, primarily as a result of blotch infections. Fruiting bodies were found on the leaves, fruit, and twigs. Many blotch cankers were observed on the smaller branches and several large cankers were noticeable on the larger branches.

Scab was more prevalent in plantings near Durant than in other orchards observed during this period. Leaf and fruit infection was found on most trees in these orchards. Many of the fruits were so severely affected that they were unmarketable. In the orchard at Wynnewood scab occurred on many of the trees; however, it was less severe than the blotch infection in the same orchard.

Black rot was extremely severe at Wynnewood. Leaves showed the typical frog-eye lesions, and fruiting bodies of the fungus were found on many fruits on the ground and on the trees.

Brown rot (Monilinia fructicola) was found in most orchards observed. Infected fruits were not difficult to find in orchards at Durant, Wynnewood, and Davis.

Fire blight was not found to be causing very much damage, but a few examples could be seen in most of the orchards.

Sooty blotch and fly speck were found on several apples in the orchards at Wynnewood.

Blackberry (40 acres) -- Two diseases were observed in plantings at Noble and Lexington. A loss of nearly 2% was due to anthracnose (Elsinoë veneta). Septoria (rubi) leaf spot was most pronounced in the Noble plantings, but, although the leaves were heavily spotted, very little defoliation had resulted.

Cherry (25 acres) -- The cherry leaf spot fungus (Coccomyces hiemalis) resulted in approximately 20% defoliation in an orchard at Noble. In a small orchard near Wynnewood defoliation was not more than 5%.

Brown rot mummies were found on trees and also on the ground, their prevalence indicating that the amount of infection had been fairly high in both orchards. The Noble orchard was visited during picking time, when a loss of 2% due to brown rot was estimated.

Grape -- Forty acres of vineyards were observed at Woodward, Noble, Wynnewood, and Durant. Black rot was the only disease found; in most instances infection was general but loss was not more than 1%. However, in the vineyard at Noble loss was heavier than in other regions, the loss here being nearly 3%.

Peach (120 acres) -- Bacterial spot remains the most widespread of all peach diseases in Oklahoma. Infections were observed at Durant, Madill, Norman, Wynnewood, Noble, Tom, Garvin, and Woodward. Defoliation amounting to at least 20% was not at all uncommon in orchards at Norman, Noble, Durant, and Wynnewood.

Brown rot mummies were observed on trees and ground at Durant, Norman, Noble, Wynnewood, and Garvin. The probable loss from brown rot in each region, based on the number of mummies found since no marketable fruit was available for examination, was approximately 5%.

Scab on the leaves was found in orchards at Durant, Wynnewood, and Garvin. In a small backyard planting a few peaches still on the trees showed fruit lesions.

Pear -- In a small, 20- or 25-acre, planting at Wynnewood, fire blight, leaf blight [presumably Fabraea], and black rot were causing together a loss of nearly 2%, black rot of the fruit being responsible for most of the loss. (Howard W. Larsh, Emergency Plant Disease Prevention Project, September 3 to 12)

ARKANSAS: Apple (500 to 600 acres) -- Apple orchards were observed in various counties throughout the State, but a more extensive survey was made in the apple-growing regions of Washington and Benton Counties in northwestern Arkansas.

Diseases were most serious in orchards more or less abandoned during the season. In the vicinity of Avoca (Benton County), almost all of the diseases reported on apples in this State were observed, including scab, blotch, sooty blotch, flyspeck, brown rot, black rot, fire blight, and cedar-apple rust. A conservative estimate of the loss from scab and blotch in most orchards observed in this region would be almost 100%. Fruits were damaged by scab and blotch to the extent that they were unmarketable. The other diseases, such as sooty blotch and flyspeck, were present on all fruits observed; causing little damage, however, except to the grade.

In the experimental orchards at Hope (Hempstead County in southwestern Arkansas), scab, blotch, black rot, and brown rot were very prevalent. At least 50% of the fruits were attacked by either scab or blotch. Several of the fruits on the ground and only a few still clinging to the trees were affected by the 2 rots.

The most serious outbreak of apple-cedar rust (Gymnosporangium juniperi-virginianae) observed was near Springdale (Washington County). An orchard of more than 40 acres had a foliage infection of 20%, with some defoliation; however, it was difficult to determine how much of the defoliation was due to the disease and how much to spray injury. The abundance of cedar-apple rust in this orchard was so great as to warrant

spraying for the control of this disease.

At Gravette in Benton County an orchard of Yellow Transparent was seriously affected by blotch. The condition of the cankers suggested that the infection was an old one, since pycnidia were not very abundant. Leaf infection was not very heavy, and it was said that the fruits were not attacked. Several trees have died during the past 3 years and others are in very poor condition. Old blotch cankers exist in abundance and many of the larger branches are girdled. Some of the symptoms in this orchard indicated attack by the Illinois blister canker fungus (Nummularia discreta); a suggestion which cannot be verified at present because of the lack of fruiting bodies. Apple scab was present on 2 or 3 trees but not severe.

Cherry (10 acres) -- The only cherries observed were in Benton County, with the largest orchard being at Rogers. Leaf spot was the only disease noted, injury being less than 5%.

Strawberry (125 acres) -- Most of the plantings observed at Beebe, Atkins, and Russellville in central Arkansas, and at Springdale in the northwest, were suffering from a condition that caused the stele to become a brilliant red. Whether or not this is the disease known as red stele is difficult to determine. If it should prove to be red stele, infection in the Beebe, Atkins, and Russellville regions is 100%. However, it seems likely that most of the trouble is caused by the extreme drought that has prevailed in these regions for the past 3 months. A further study is being made.

Grape (640 acres) -- The most common disease observed in Arkansas vineyards this year is black rot, which is common near Farmington, Springdale, Rogers, and Summers, in northwestern Arkansas. In 1 or 2 plantings near Farmington the loss was more than 15%. Downy mildew (Plasmopara viticola) was observed on a few leaves in a planting at Rogers.

Peach (600 to 800 acres) -- Peach orchards were examined in the Nashville (Howard County, southwest), Forrest City (St. Francis County, east), Rogers (Cross County, east), and Bentonville (Benton County, northwest) regions.

The 3 diseases observed to be causing serious damage were bacterial spot, brown rot, and peach scab.

In several large orchards near Avoca (Benton County) 100% infection with the bacterial spot organism was not at all uncommon. Most of the trees in this region of northwestern Arkansas were nearly 90% defoliated. The disease was also present in orchards at Nashville, Forrest City, and Wynne, but with considerably less virulence.

Brown rot was prevalent on fruits still on the trees at Hope, and the number of mummies present on the trees as well as on the ground indicated that infection in this region had been fairly heavy. This was true also in the vicinity of Avoca where there was considerably more evidence of brown rot infection.

Scab occurred on late peaches in orchards at Hope. Most of the peaches in the experimental orchard were attacked by the scab fungus. Foliage infection was rather prevalent in this region, as well as in almost all orchards observed elsewhere with the exception of commercial orchards in the Nashville and Forrest City regions. (Howard W. Larsh, Emergency Plant Disease Prevention Project. August 21 to 31)

OHIO: Cherry -- Near Clyde, several cherry orchards were observed where the leaf spot disease was defoliating the trees. In one of these orchards the pathologists from the Ohio Agricultural Experiment Station are conducting a series of experiments in the control of the disease. The fungus is controlled to a considerable degree by a Bordeaux spray but this year timing was very important. In one orchard where spraying of half of the orchard was delayed by 2 days of rain the trees were nearly defoliated. The other half of the trees retained most of their leaves. Organic and fixed copper compounds being tested by the Wooster Station are controlling the disease very well on a number of the test plots observed. Unsprayed trees held only 4% of their leaves. (M. R. Harris, Emergency Plant Disease Prevention Project. August 30 to September 4)

INDIANA: Apple -- Apple orchards observed in the vicinity of LaPorte in northwestern Indiana during the week ending August 28 were poorly sprayed, largely because of the light set of fruit. In all cases the fruit and leaves were affected severely by scab.

During the period from September 21 to 24, 9 apple orchards were examined in central and western Indiana. The percentage of fruit infected with scab varied from 2 or 3, to 75, in the different orchards. In 6 of the orchards over 25% of the fruit of the very susceptible varieties such as Delicious, Winesap, and Rome Beauty, showed scab. The amount of fruit with scab appeared to be related to the amount of scab in the orchard in 1942, to the thoroughness of application and timing of sprays in 1943, and to the variety of apple.

Rome Beauty apples and leaves in an orchard near Covington had a trace of apple rust.

In an orchard near Bloomfield, 50% of the 10-year-old trees of a new unnamed variety of apple were dead or affected by root rot. Delicious trees were affected also. The diseased roots resembled somewhat those killed by Xylaria mali. However, it appeared that the diseased condition of the trees might in part be associated with poor soil-water drainage.

During the week ending September 18, 3 commercial apple orchards in southeastern Indiana were examined. In an orchard near Aurora, Delicious apples were affected moderately with scab, while Jonathan and Grimes Golden were nearly free. Jonathan foliage was infected moderately with rust (Gymnosporangium globosum). A trace of quince rust (G. clavipes) was observed on Delicious fruits.

In an orchard near Seymour approximately 50% scab was observed on Delicious, Golden Delicious, and Ben Davis, and 25% on Grimes Golden. Practically all of the fruit from a number of old Grimes Golden trees were spotted severely by Helminthosporium papulosum. (R. C. Baines, Emergency Plant Disease Prevention Project)

ILLINOIS: Apple -- From September 1 to September 3, a survey trip was made through southern Illinois, in company with Dr. H. W. Anderson, to determine the prevalence of diseases on apples and other crops. In well managed and sprayed orchards the apples were practically free from scab. However, in poorly sprayed orchards, the fruit was severely scabbed.

Golden Delicious apples in 3 orchards were severely affected with bitter rot. Approximately 90% of the fruit was affected on many trees. On the Jonathan, Grimes Golden, Stayman Winesap, Winesap, Delicious, and York Imperial varieties only an occasional fruit was affected. Dry weather and applications of Bordeaux in many orchards appeared to have checked the further spread of bitter rot.

In one orchard, Jonathan foliage was severely infected with rust, [species not designated]. Winesap apples on 7 trees in a low area in an orchard near Omaha, Illinois, were affected severely by sooty blotch. Occasional fruits infected with blotch and apple rust were found in many orchards.

During the week ending September 11, crops were inspected in northern Illinois, with Dr. M. B. Linn. In an orchard near Mt. Carroll, Delicious and Northwestern Greening apples were affected moderately with scab and the latter variety severely with blotch. Approximately 50% of Delicious and Rome Beauty apples in an orchard near Chillicothe were affected severely with scab, while 2 to 3% of Jonathan fruit was scabbed slightly. (R. C. Baines, Emergency Plant Disease Prevention Project)

COLORADO: Apple -- In the vicinity of Paonia in Delta County the Rome Beauty variety was moderately affected by fire blight, Jonathan slightly affected, while on Delicious there was only a trace. In the vicinity of Hotchkiss in the same county, only a slight amount of fire blight was recorded on Rome Beauty.

Pear -- In Delta and Mesa Counties the Bartlett variety was slightly affected by fire blight; Duchesse d'Angouleme (Duchess) and Kieffer showed only a slight amount.

Apricot -- Most of the trees infected with the ring spot virus disease have been eradicated. Up to the present the disease has been recorded only in the Palisade district in Mesa County.

Peach -- In the Palisade district in Mesa County, 3305 mosaic-diseased trees were removed during the 1943 growing season as compared with 5455 diseased trees removed in 1942, according to information released by the U. S. Bureau of Entomology and Plant Quarantine, and the Bureau of Plant and Insect Control, State of Colorado. (E. W. Bodine, Emergency Plant Disease Prevention Project. September 12 to 18)

NEW MEXICO: Apple -- Powdery mildew (Podosphaera leucotricha) was causing slight damage in a 5-acre planting at High Rolls, Otero County (September 10). Fire blight to the extent of 10%, and slight iron deficiency symptoms, were observed in 10 acres at Roswell, Chaves County (September 15).

Peach -- Mosaic was very destructive in a 5-acre planting at Roswell, and in 3 acres at Espanola in Rio Arriba County (September 18), 95% and 90%, respectively, being infected. Heavy infections were also observed in 3 acres at Fort Sumner, De Baca County (September 15), and another planting at Espanola, of 4 acres. A moderate amount was evident in a 1-acre planting at Espanola. In 13 acres examined at Albuquerque in Bernalillo County, September 17, only 2 infected trees were found.

Nitrogen deficiency symptoms were slight on 2 trees observed at Socorro, in Socorro County (September 16)

Cherry -- One tree observed at Socorro was suffering from a heavy attack of crown gall (Agrobacterium tumefaciens).

Grape -- The only trouble observed on grape was a slight amount of iron deficiency in a 2-acre planting at Fort Sumner and in 8 plants at Espanola.

Pecan -- Rosette caused by zinc deficiency was severe in 3 trees at Roswell. (Wm. C. Hoyman, Emergency Plant Disease Prevention Project)

CALIFORNIA: Three days were spent in the vicinity of Colusa in Colusa County, Oroville in Sutter County, and Corning in Tehama County, examining olives and other crops, in company with Mr. C. E. Scott, Extension Pathologist, and Dr. H. Earl Thomas, of the California Experiment Station.

Olive -- Considerable time was spent in the vicinity of Oroville looking for symptoms of monkey-face or dieback of olives. This disease has recently been shown to be caused by a deficiency of boron. Only a small amount was seen this year, since most of the growers in this region had made applications of borax to their olive groves last winter. Because of some as yet unknown factor the disease was not so serious on untreated trees as it had been in previous years.

Only a trace of olive knot, caused by Agrobacterium savastanoi, was seen in the region around Oroville, and the damage here was negligible. Olive knot was very common in the Corning area, where the knots were very numerous, especially those resulting from infection during the past year. A number of knots were seen at points where artifical wounds had been made.

Peach -- One young peach orchard near Biggs which was planted to tomatoes was examined for the possible presence of Verticillium wilt, but none was seen.

Buckskin disease (virus) was seen on peach in Sutter County and in Glenn County. This constitutes the first report of the occurrence of this disease in Glenn County. The trees observed showed the advanced stages of the disease.

Prune -- Exanthema or dieback of French prune, due to overbearing and possibly also potassium deficiency, was seen near Corning.

Orange -- Boron injury resulting from a too-heavy application of borax to the soil around orange trees was seen near Oroville. Several orange trees showed numerous dead twigs resulting from citrus blast caused by Pseudomonas syringae. The damage on the whole was slight.

Armillaria root rot -- Armillaria root rot (A. mellea) injury was seen on pistachio trees in the United States Plant Introduction Gardens at Chico. Armillaria root rot was common and serious in almond orchards near Corning and was widespread in this area. Little seems to be done about its control here. (Horace L. Barnett, Emergency Plant Disease Prevention Project)

DISEASES AFFECTING TUNGOIL PLANTATIONS IN FLORIDA

Arthur S. Rhoads

Clitocybe root rot (Clitocybe tabescens) was observed to be of widespread occurrence and highly destructive to many tungoil (Aleurites fordii) trees in a 13-year-old planting at LaCrosse. This was one of the first commercial plantings to be made in Alachua County and the trees were set at the extremely close spacing of 12 1/2 feet in the row and 30 feet between rows. The larger part of this planting was made on old, worn-out land that had been farmed for 40 years but an additional marginal area of timber was cleared to extend the planting. A large number of trees over most of this more recently cleared land were found to be attacked by root rot and in various stages of decline or entirely dead. Only occasional trees, mostly scattered, exhibited the disease on the older cleared land and on other adjacent planted tracts hastily examined, the total plantings under one ownership amounting to about 1000 acres. In the worst affected area several trees had been removed during each of the past 3 years on account of decline from this disease. It was estimated that in this area alone at least 75 trees were dying or dead from root rot and that as many more had been removed previously on account of decline from this trouble.

The growth and condition of the trees on the various tracts examined varied greatly according to the local soil and soil moisture conditions but, in general, the trees were extremely backward and frequently decidedly stunted. The chief drawbacks to the success of this extensive planting have been the poor, sandy soil, much of which is inclined to be droughty during dry periods and to have too high a water table during rainy periods; inadequate fertilization, with none for a period of 3 or 4 years; and cold injury, which had caused considerable damage.

The occurrence of Clitocybe root rot also was observed on 5 tungoil trees in a large and extremely thrifty commercial planting at Lamont, Jefferson County where this disease was found killing a large number of trees when the writer made an extensive examination 2 years ago and made isolations of the causal fungus. Four of these trees had just been dug out and the other one was located by the wilting of the foliage on the limbs on the worst affected side.

Clitocybe root rot has been observed by the writer to cause the loss of a large number of trees over a period of several years in commercial plantings in northern Florida and isolations of the causal fungus have been made on various occasions. It usually attacks scattered trees but in some instances results in the dying of several trees in local areas. The incidence of this disease has been observed to be correlated with the prevalence of oak trees on the land prior to clearing and the extent to which stumps and roots of these trees were removed in clearing. It so happens, however, that oak trees are of more or less frequent occurrence on most tracts that are planted. The disease has not been observed to kill trees until they attain an age of 5 1/2 years and usually not until they become older.

Unfortunately, the occurrence of Clitocybe root rot is rarely noted until the trees suddenly begin to wilt and decline, by which time the

disease is usually too far advanced to save them. The wilting and decline frequently has its inception on the limbs or trunk divisions of the side of the tree on which the disease has made the greatest headway on the roots and has spread up around the root crown. In many cases, however, the wilting develops simultaneously over the entire tree. In cases where the disease progresses more slowly its presence is manifested by the leaves becoming reduced greatly in size, more or less thin and chlorotic. When the disease progresses sufficiently to girdle the base of the tree completely, however, wilting and dying follows rapidly.

A considerable number of trees in various stages of the disease have been examined after the removal of the soil or the trees. In many cases it is apparent that when the disease apparently starts at the root crown it works downward on the divisions of the taproot and kills them before developing to any great extent on the lateral roots. The causal fungus usually invades the root system extensively before it spreads upward on the root crown sufficiently to kill the bark at the base of the tree. It frequently develops higher above the base on one side of the tree than the other but rarely over from 6 to 8 inches before the tree is girdled. The invasion of the living bark at the base of the tree by the advancing mycelial sheets of the fungus often stimulates a gummy degeneration of the tissues and in some instances gum may accumulate so extensively in local areas as to cause short longitudinal fissures to develop in the living bark, through which masses of gum exude and harden upon exposure to the air. The mode of gum formation appears to be analogous to that of citrus and stone fruit trees. With the death of patches of bark at the base of the tree the tissues commonly become blackened and develop a sour, ill-smelling odor. The areas of bark killed on the basal lesions usually remain intact for a time and the damage may not be readily apparent without close observation, when it can be seen that the bark is dead and discolored, with frequent longitudinal fissures developed through desiccation. In many instances the advanced development of the root rot fungus is made apparent by the presence of sawdust sifting out of minute holes made by bark beetles, which frequently attack the trees after they have begun to decline. The wood of the larger roots and even the butts of the attacked trees exhibits an extensive development of the fungus, which causes a white decay of the delignifying type. In addition, radial cracks, filled with whitish sheets of mycelium (xylostroma) commonly develop in the wood of the larger roots and butts of the trees.

Clitocybe root rot has been found to occur in numerous localities throughout most of Florida, where it has proved highly destructive to a great variety of woody plants, including native forest trees, fruit trees, and ornamental trees, shrubs and vines, including many exotic ones. The prevalence of this disease in a number of the older tungoil plantings in northern Florida indicates that it may constitute a serious problem to one of Florida's newer horticultural industries and refutes the statement frequently made by writers that this tree is free from destructive diseases. It appears reasonable to anticipate that the disease may be expected to develop in many of the newer extensive plantings that have been made when the trees attain sufficient age.

Clitocybe root rot was observed also on various ornamental and other trees and shrubs at various points that have been visited, including a

number of new hosts. It was observed on Tibouchina glandulosa, Grewia (? occidentalis), and Ficus sp. (S.P.I. No. 80569) in one property at Lake Alfred where it has proved extremely destructive to a great variety of exotic plants over a period of several years. The occurrence of Clitocybe root rot also was observed on Casuarina lepidophloia used as a hedge at Gainesville, sand pear (Pyrus pyrifolia) and an unidentified Ternstroemia-like shrub at Monticello, and on camphor (Cinnamomum camphora), deodar cedar (Cedrus deodara), privet (Ligustrum lucidum), and on an as yet unidentified Lonicera-like shrub in 2 properties at Quincy. Clitocybe tabescens was isolated in series of cultures made from specimens of Grewia (? occidentalis) and Ficus sp. at Lake Alfred and also from those of deodar cedar, privet, and the 2 different unidentified shrubs at Quincy.

Thread blight -- A serious outbreak of thread blight (Corticium stevensii) [Pellicularia koleroga] was found to occur on approximately 130 acres of the tungoil orchard at Lamont where the root rot occurred. The disease appeared to be confined to the lower-lying land, especially where the trees were set particularly closely (15 ft. in the row), so that undue crowding and shading now occurs. It was especially bad on the lowest portion adjacent to the hammock margin, where virtually all the trees exhibited more or less of the disease. Thread blight spreads rapidly during the warm, humid, rainy weather of the summer, resulting in extensive defoliation and dying of leaves, twigs, and branches. The company spent nearly $800 in pruning 30 acres of trees in an attempt to control the disease but with little evidence of success. Spraying, however, has proved very effective. Trees sprayed once last year and again this past summer appeared fairly free from the disease.

EMERGENCY PLANT DISEASE PREVENTION PROJECT. July 25 to August 31.

NOTES ON PLANT DISEASES IN NORTH CAROLINA IN 1942

Following are brief notes on diseases of various crops in North Carolina in 1942. Rainfall was about normal in 1942 (Figure 1) with a fairly even distribution throughout the season, with some excess in August, September, and October, which had a pronounced effect on certain diseases. This is in contrast to the season of 1941, when a severe drought began in August and extended through November (PDR 26:104-113. March 15, 1942). Temperature conditions were practically normal throughout the season (Figure 2). - - - Luther Shaw

APPLE DISEASES. Luther Shaw and J. A. Lyle.

Scab (Venturia inaequalis) was more prevalent in 1942 than in 1941, however, severe damage was not observed in any orchard that received a systematic spray schedule. Observations of ascospore development for the past three years in the major commercial apple-producing counties of the State, namely, Alexander, Buncombe, and Wilkes, showed that the major ascospore discharge did not take place until after bloom. Therefore, protection of the fruit during the calyx stage has been particularly important. When protection during this stage was obtained, subsequent scab development has been of only minor consequence, which was evidently related to the relatively high summer temperatures.

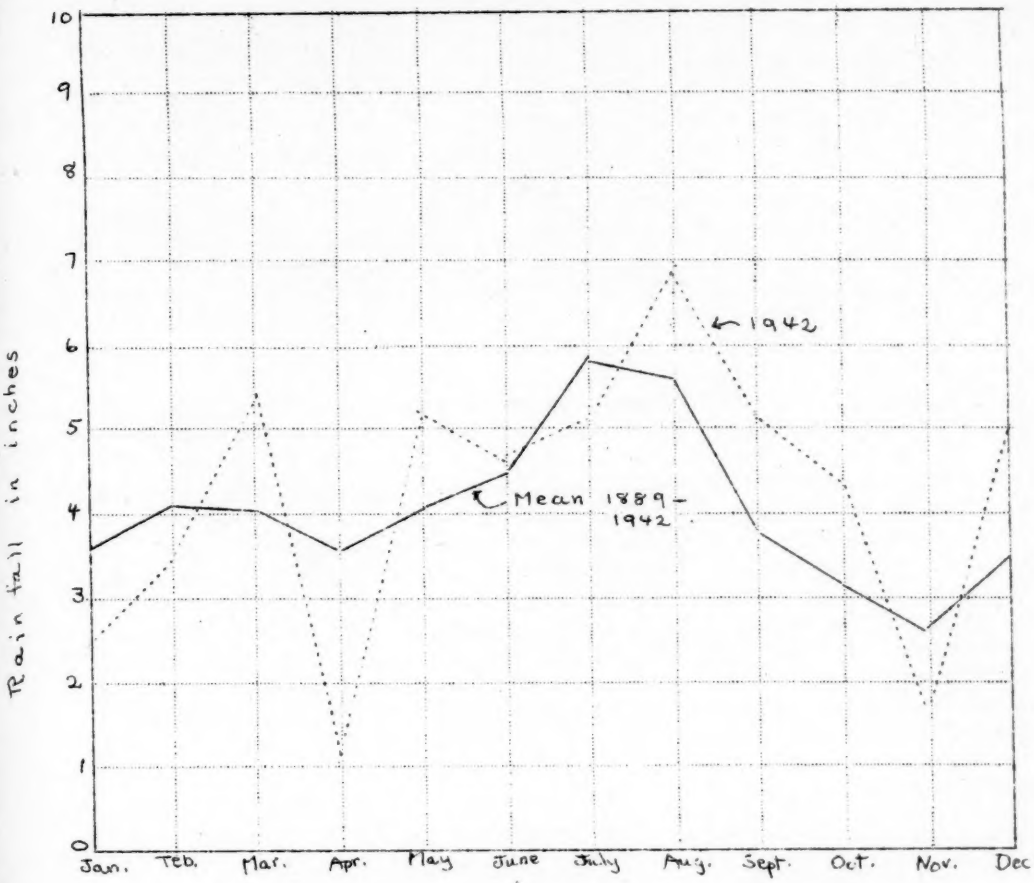

Figure 1. Rainfall in North Carolina.

Fire blight (Erwinia amylovora) was of minor importance in the commercial apple orchards in the mountain area; however, it was unusually severe in both commercial and home orchards in the piedmont and coastal plains areas of the State. This was obviously related to excessive rains in the late April and early May which extended through the blooming period.

Bitter rot (Glomerella cingulata) was present in a substantial percentage of the commercial orchards in the State. In some orchards where the cover sprays were not applied frequently, 15 to 20% of the fruit was lost, particularly on such varieties as Golden Delicious and Limbertwig. Most of this loss occurred during August and early September when there was excessive rain.

Blotch (Phyllosticta solitaria) was of some importance in the major commercial orchards, particularly in those where the cover sprays were

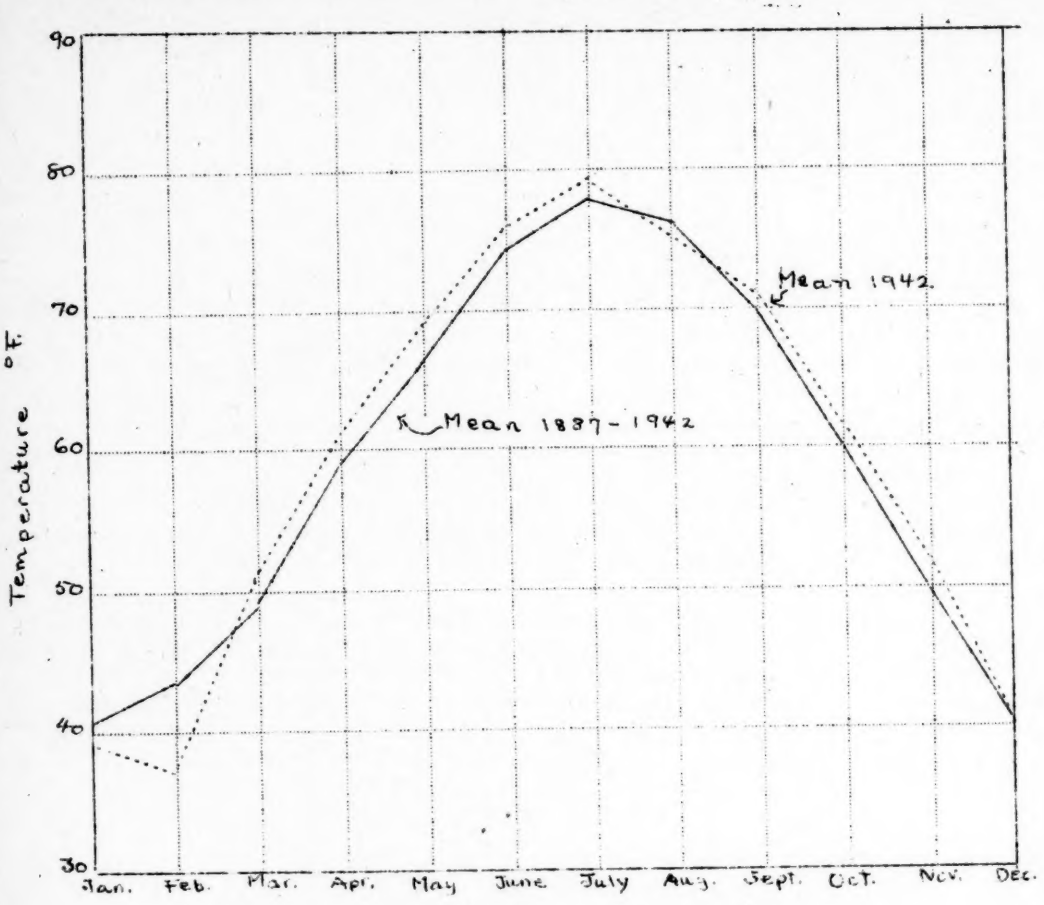

Figure 2. Mean temperatures in North Carolina.

not applied. Approximately 10 to 15% of the fruit was damaged. This disease was noted especially on the Blacktwig and Limbertwig varieties. This fungus was more prevalent during the periods of excessive precipitation in August and early September.

Frog-eye (Sphaeropsis malorum) was of importance even in the better sprayed orchards. The damage from this leaf spot ranged from a mild attack in some orchards to a severe one in others. Observations on the pycnospore development in Wilkes County in 1942 showed that infection occurred as early as the latter part of April and extended through the middle of August. The most extensive infections occurred during the periods of excessive rainfall. Bordeaux mixture particularly the stronger concentrations, gave fair to good control. No variety was particularly resistant.

Rust (Gymnosporangium sp.) was of minor importance in the commercial

apple orchards of the mountain area. It occurred to some extent only in a few isolated orchards.

Sooty blotch (Gloeodes pomigena) and flyspeck (Leptothyrium pomi) was of no consequence in the commercial apple orchards. These 2 diseases were present only to a slight degree in more or less isolated orchards, especially where the cover sprays were not applied.

CROTALARIA DISEASES. D. E. Ellis and H. R. Garriss

During the summer of 1942 several diseases were observed on Crotalaria, a crop which is steadily increasing in importance in the State because of its resistance to the root knot nematode (Heterodera marioni) and its value as a cover crop.

The most serious disease observed was gray mold (Botrytis cinerea), which was rather widespread and severe. This disease was common on Crotalaria spectabilis and was observed on one specimen of C. intermedia. It was most severe late in the season and in moist situations where it caused losses of up to 5%.

A leafspot of C. spectabilis was generally distributed throughout the State, with which a fungus, believed to be Cercospora crotalariae, was associated. It was widespread but no serious defoliation was observed.

A root and stem rot was observed in plantings of C. spectabilis in Wake County in August. The disease was most severe in low areas of the field resulting in the death of numerous plants. Fusarium sp. was found fruiting abundantly on the stems of dead and dying plants just above the soil line but it was not determined whether or not it was the causal agent.

Other diseases observed on C. spectabilis in 1942 include mosaic (virus) and southern root rot (Sclerotium rolfsii), neither of which caused extensive damage.

PEACH DISEASES. Luther Shaw and A. W. Feldman

Bacteriosis (Phytomonas pruni) [Xanthomonas] was not general in 1942; however, light epidemics did develop in a few commercial orchards, and caused some fruit damage. This loss occurred on some of the later varieties, particularly Elberta, in July. Losses for the State as a whole did not exceed 0.1%.

Brown rot (Sclerotinia sp.) [Monilinia fructicola] was considerably more injurious in 1942 than in 1941. Several orchards were observed in which 5 to 10% of the fruit was rotted by this disease, particularly on the later varieties. Loss for the State as a whole was in the neighborhood of 1%.

Scab (Cladosporium carpophilum) was severe in non- and poorly-sprayed orchards, but was of no consequence in well-protected orchards.

Curl (Taphrina deformans) was not observed in a commercial orchard.

Fruit rot in transit was more severe than usual. Several cars of peaches were lost entirely. The cause or causes of this rot was not determined; however, it is probable that several organisms were involved.

Tree death resulting from Heterodera marioni, Armillaria mellea, and other root parasites was not so pronounced in 1942 as it was in 1941. Normal and evenly distributed rainfall during the summer of 1942 is believed to have been a contributing factor to the survival.

PEANUT DISEASES. Luther Shaw and R. K. Speairs

Leafspots (Cercospora spp.) were more severe in 1942 than they had been in 2 years. This was definitely related to the above normal rainfall in August and September. Defoliation of plants was general and heavy throughout the State by late August. On the basis of results of experimental and demonstrational tests on peanut leafspot control it is estimated that leafspots caused about a 20% reduction in the yield of this crop in North Carolina in 1942. The loss was more pronounced in the Old Peanut Belt than it was in areas of the State where peanuts were grown commercially for the first time in 1942. However, in the new areas leafspots were moderate to severe by the end of the season. Some increase in the acreage of peanuts dusted for leafspot control was noted in 1942. Lack of dusting equipment undoubtedly prevented further expansion.

Poor stands resulting from seed decay prior to germination were general throughout the State, and were particularly pronounced on the Spanish variety. This was evidently related to a combination of cool, wet soil during the planting season and poor seed. Results of experimental tests conducted in 1941 and 1942 show that seed treatment, with Arasan particularly, will give a high degree of insurance against poor stands, especially when poor seed are planted under adverse weather conditions. Seed treatment of peanuts is being strongly recommended in 1943.

Fruit, stem, peg, and root decays (Sclerotium rolfsii, Rhizoctonia solani, Fusarium spp. and others) were abnormally severe in 1942. Many fields were observed in which 50% or more of the nuts were shed at digging time. It is estimated that this disease complex caused a 12% reduction in yield for the State as a whole. S. rolfsii was prominently associated with this decay late in the season.

A period of heavy and more or less continuous rainfall during and following the digging season caused extensive damage to peanuts in the stack. A high percentage of the hay was badly damaged or ruined for feeding purposes. These conditions resulted in bad discoloration of the peanut pods, and in some cases greatly reduced germination.

POTATO DISEASES. L. W. Nielsen

Of the several potato diseases found in the early potato section (eastern North Carolina) in 1942, scab (Actinomyces scabies) was probably most serious. The precipitation through the early potato section varied considerably. That area located between the Pamlico and Neuse Rivers was particularly dry during April and May. The crop was markedly reduced and scab was very bad on many farms. A single grower had to sell the crop from approximately 80 acres as commercial table stock because of scab. Many smaller growers suffered losses because of the scab that developed on localized areas of their farms.

In the late potato section (western North Carolina) scab was also present. A number of plantings up for certification were rejected because of scab. In several cases the scabby tubers were found in those soils heavily limed with ground dolomitic limestone or where the ground limestone had been piled on the land prior to spreading.

Southern bacterial wilt (Phytomonas solanacearum) [Pseudomonas] was observed in the early potato section and through the piedmont region. In a few cases from 25 to 50% of the plants were found infected in the

early potato section. Of the several farms visited during harvest, on only 2 was there appreciable tuber rot observed. Actual counts of rotted tubers were not made, but the magnitude of losses on the 2 farms was estimated at 10 and 5%. This estimate only takes into consideration those tubers discarded during the picking and packing operations.

Early blight (Alternaria solani) was generally distributed through the early potato section. In many cases the foliage had been prematurely destroyed by the pathogen. It appears that a considerable reduction in yield may have occurred on many farms due to this disease. The growers are not familiar with the disease and suspect the death of the vines caused by A. solani infection to be the natural maturation of the plants.

Late blight (Phytophthora infestans) was not observed in eastern North Carolina but was serious in the late potato section. The growers reported losses from tuber rot at harvest as great as 50% and much of this rot was possibly late blight tuber-rot.

The "bin inspection" of potatoes up for certification in western North Carolina was made in late January, 1943. Nearly all lots of potatoes inspected in Henderson County had some net-necrosis that conformed with the tuber necrosis described for blue stem. The percentage of affected tubers from the various farms in this County varied from zero to 15 to 20%. An inspection of table stock produced in the vicinity of Henderson County had approximately 80% of the tubers infected. A seed stock up for certification in Yancey County was found to have 38% affected tubers. The potato varieties involved were Green Mountain and Sequoia. The Sequoia is the predominant variety in this section and it and the Green Mountain appear to be very susceptible to this disease. In some cases the build-up of net-necrosis in lots of potatoes during 1942 suggested that the disease had spread from nearby table stock plantings known to be infected with the disease believed to be blue stem. One case was particularly striking. Two growers using the same seed source had their certified seed plots approximately one mile apart. One grower's seed plot was only a few feet from an infected Green Mountain table stock planting. The bin inspection showed that this grower's crop had 30% net-necrosis while his neighbor, about one mile away, had 4%.

Ring rot (Corynebacterium sepedonicum) was found in several plantings of the early crop in eastern North Carolina. In most cases less than 1% of the plants were infected. Most of the infected fields were planted from seed produced by one northern seed grower. Ring rot was also found in one seed lot of Sequoia produced in western North Carolina (crop produced in 1941).

A car load of certified Cobbler seed heavily infested with the sclerotia of Rhizoctonia solani was planted in eastern North Carolina without treatment. Two fields planted with this stock were found to have about 5% Rhizoctonia. Fields planted with seed free or nearly free of sclerotia had about 2% Rhizoctonia. For the early potato section the losses from Rhizoctonia were negligible.

Diseases of Minor Importance: Blackleg (Erwinia carotovora) [E. phytophthora] was observed on many farms but only on occasional farms did it affect 1 or 2% of the plants.

Transit rots were reported only in the case of 2 cars. One car was apparently packed from a field of potatoes infected with Phytomonas

solanacearum [Pseudomonas], and the other from stock subjected to direct sunlight and the resulting high temperatures over a week-end period prior to packing. In general, the weather conditions during harvest were not favorable for tuber and transit rot development. There was little rain and the night temperatures were fairly cool.

Fusarium wilt (Fusarium solani var. eumartii) was observed in a number of the table stock fields in the drier area of the early potato section. It was also found in a few of the seed stocks of the late potato section.

Nematodes (Heterodera marioni) were found in 2 table stock plantings of the early potato section and a home garden in Wake County. In all 3 cases the tuber infection was mild. A tuber sample submitted for diagnosis from Rutherford County was heavily infected.

Southern root rot (Sclerotium rolfsii) was observed on a few farms, where it occurred in restricted parts of the potato fields.

Leaf roll and mosaic (viruses) were both observed in the early potato section, but the amount of infection traceable to the certified seed source seldom exceeded 5% for the 2 diseases. Leaf roll was the commoner.

SMALL GRAIN DISEASES. Howard R. Garriss

Prevailing weather conditions during the growing season favored the development of smuts and other diseases and resulting losses were more severe than in several years. Disastrous losses occurred mainly on farms where disease-control practices have not been adopted.

In 1942 a total of 138 growers had fields of small grain entered for seed certification. Of this total, approximately 10% were refused certification on some or all their fields on account of the presence of smut diseases in amounts exceeding the tolerance (1%).

Barley -- Black loose smut (Ustilago nigra) was observed in most fields planted to untreated seed of common varieties and losses ranged from 1 to 10%, averaging approximately 4%. Only traces of infected heads were observed in fields of Iredell and Davidson barley.

Brown loose smut (Ustilago nuda) was not generally destructive over the State, however, an occasional field with 5 to 8% infection was observed.

Covered smut (Ustilago hordei) [U. jensenii] appeared in higher percentages than in any previous year observed by the writer (since 1939). Many fields planted to untreated seed showed from 5 to 10% infection.

Stripe (Helminthosporium gramineum) was common on barley plantings throughout the State and serious losses resulted in many fields. In one field in Stanley County it was estimated that 75% of the crop was lost as a result of stripe infection. Many fields in Caldwell County suffered 10 to 40% loss of the crop due to the presence of the disease. From these and other cases observed it is evident that stripe caused heavier damage in North Carolina in 1942 than in many years past.

Scab (Gibberella saubinetii) [G. zeae] was quite severe in localized areas and yields were seriously reduced in some fields.

Leaf rust (Puccinia anomala) was quite severe in many plantings throughout the State. In most cases, however, infection became evident after the heads were mature and reduction of yields was not generally serious. However, many fields planted to late maturing varieties showed evidence of 10 to 15% reduction in yield.

Oats -- Loose smut (Ustilago avenae) was generally more destructive

in plantings than in several years. Plantings from untreated seed of susceptible varieties showed 1 to 20%, averaging about 5% in such plantings throughout the State. Only traces of loose smut were observed in fields planted to such resistant varieties as Letoria, Victorgrain, Stanton, and Fulgrain 4. Lelina did not show as strong resistance to loose smut as the varieties mentioned above -- as high as 3% infection was observed in some fields planted to this variety.

Covered smut (U. kolleri) caused about one-third as much damage as loose smut.

Wheat -- Stinking smut (Tilletia tritici) [T. caries] was very destructive in fields planted to untreated seed. The damage (worst in years) was more pronounced in the piedmont and mountain areas where many fields showed 15 to 25% damage and some showed losses as high as 40%.

Loose smut (Ustilago tritici) was present in most fields planted to susceptible varieties, ranging from traces to as high as 10% in some fields. Here traces were found in scattered fields planted to Leaps 157.

Leaf (Puccinia triticina) [P. rubigo-vera var. tritici] was quite severe in many locations late in the season. Yields of early maturing varieties such as Redheart and Carala were not reduced to any noticeable degree since maturity of the heads preceded severe leaf infection. In many fields planted to later maturing varieties such as Leaps and Purple Straw severe leaf infection took place before the heads were mature and a considerable reduction in yield was evident.

Nematode (Anguina tritici) caused more damage in 1942 than in any previous year observed and severe outbreaks occurred in areas where the disease had not been reported before. Severe losses were observed in localized areas in the coastal plain, piedmont, and mountain areas. From 25 to 50% of the crop was destroyed in some fields in Nash, Polk, and Clay Counties.

Scab (Gibberella saubinetii) [G. zeae] was responsible for slightly reduced yields in many fields.

TOBACCO. K. J. Shaw and T. E. Smith

Black root rot (Thielaviopsis basicola). In areas where this disease has caused serious losses in past years, growers generally are planting the 400 Variety which is highly resistant. Consequently, losses were light in 1942.

Black shank (Phytophthora parasitica var. nicotianae) is now present in Forsyth, Guilford, Rockingham, Yadkin, Stokes, Surry, Caswell, Alamance, and Person Counties in the piedmont and in Pitt County of eastern North Carolina. New outbreaks were less common in 1942 than in the previous year. However, the rapidity of its spread continues to be a major problem. Losses in 1942 were estimated at 0.25% of the State acreage.

Blue mold (Peronospora tabacina) was less severe in 1942 than in any previous year since its occurrence in the flue-cured belt of North Carolina. Only isolated outbreaks occurred. Damage was confined mostly to mild burning and spotting on the few plants that were affected. During the latter part of May a rather general outbreak developed on field plants and caused considerable alarm. This was during an abnormally cool period of weather and with the advent of hot weather, the plants rapidly recovered resulting in negligible losses.

Fusarium wilt (Fusarium sp.) is confined to areas in Columbus County where approximately 500 acres are destroyed annually by this disease.

Granville wilt (Phytomonas solanacearum) [Pseudomonas] destroyed about 8000 acres of tobacco in 1942 or about 1.5% of the State acreage. The amount of wilt was as great as during previous years in the Creedmoor area of Granville County but abnormally wet, cloudy weather in June, July, and August delayed wilting and death of leaves. On the whole, this wilt was slightly less destructive in 1942 than in 1941.

Mosaic (virus) was not so generally present as in 1941. Losses amounted to about 4% of the crop as a whole. Yield reduction rahter than a lowering of quality was more significant in 1942 since there was very little margin in money value for the better grades.

Root knot (Heterodera marioni) caused greater damage in 1942 than in most previous years. It was especially severe in areas of eastern North Carolina where favorable growing conditions early in the season were followed by extremely unfavorable conditions later. Loss to the State as a whole was estimated at 5% of the crop.

Southern stem and root rot (Sclerotium rolfsii) caused greater damage in 1942 than in any previous year. Many fields were observed with as much as 25% infection. Occasionally as much as 50% could be found in individual fields. Loss to the crop as a whole amounted to approximately 1%.

Sore shank (Rhizoctonia solani) was confined mostly to isolated plants with an occasional field with as much as 5% infection. Loss to the crop as a whole would amount to only a trace.

Leafspots (Fungi and bacteria) caused no appreciable losses; although in areas where serious damage occurred from root knot there was an abundance of Alternaria leafspot, especially on the uppermost leaves.

Total losses from diseases amounted to approximately 15% of the crop. With 540,000 acres planted that yielded 1,077 pounds per acre and sold for an average of $38 per 100 pounds, the loss from diseases amounted to $33,150,000 in 1942.

VEGETABLE CROPS. D. E. Ellis and H. R. Garriss

An unusually large number of diseases were encountered in 1942. This was due in part to weather conditions which were generally favorable for disease development. The greatly increased planting of vegetable crops brought about by the Victory Garden Program also served to focus attention on disturbances affecting such crops. The most serious diseases encountered were those, such as the wilts and root rots, caused by soil-borne organisms. Root knot (Heterodera marioni) and southern root and stem rot (Sclerotium rolfsii) were widespread on a large number of the warm weather vegetable crops. Root knot was the more serious causing substantial losses in some localities, particularly in the coastal plains area.

Bean -- Root knot (H. marioni) was probably the most serious disease affecting beans in North Carolina in 1942, both in commercial and garden plantings.

Ashy stem blight (Macrophomina phaseoli) was more widespread than usual and caused some loss in late spring and summer plantings of both snap and lima beans.

Dry root rot (Fusarium solani var. martii) appeared to be primarily responsible for death of 10 to 40% of the plants in variety test plots of snap and lima beans in Wake County.

Anthracnose (Colletotrichum lindemuthianum) caused considerable damage to snap beans in the mountain area.

Bacterial blight (Phytomonas phaseoli) [Xanthomonas] was encountered occasionally but in general was of minor importance.

Southern root rot (Sclerotium rolfsii) caused substantial losses in fall plantings of snap beans in New Hanover and Pender Counties.

Cowpea -- Leafspot (Cercospora cruenta) was usually severe in 1942 and caused considerable defoliation in field and garden plantings.

Root knot (H. marioni) and wilt (Fusarium bulbigenum var. tracheiphilum) were responsible for serious losses in the coastal plains area, particularly in home gardens. The 2 diseases were often closely associated, the most serious cases of wilt occurring where root knot was also severe.

Other diseases observed included leafspot (Amerosporium oeconomicum) and powdery mildew (Erysiphe polygoni).

Crucifers -- A report from Henderson County indicated that yellows (Fusarium conglutinans) was the most important disease of cabbage in the mountain area where efforts are being made to encourage more extensive use of resistant varieties.

Anthracnose (Colletotrichum higginsianum) was widespread in fall turnip plantings, in some instances causing severe leafspotting and some defoliation.

Downy mildew (Peronospora parasitica) caused widespread damage to cabbage and cauliflower seedlings in the winter of 1941-1942 but was not serious in the winter of 1942-1943.

Cucurbits -- Downy mildew (Pseudoperonospora cubensis) appeared in Scotland County on cucumber and cantaloupe about June 15, several weeks prior to harvest, but weather conditions did not favor its spread and little damage resulted.

Leaf blight (Alternaria cucumerina) of cantaloupe was generally distributed in the commercial melon areas but was less important than in 1941.

Anthracnose (Colletotrichum lagenarium) was widespread on cantaloupe, watermelon and cucumber.

Powdery mildew (Erysiphe cichoracearum) was observed on cantaloupe in several southeastern counties but caused no appreciable damage.

Watermelon wilt (Fusarium bulbigenum var. niveum) was widespread and often caused complete crop failure where resistant varieties were not used. The resistant Hawkesbury is rapidly supplanting susceptible varieties in commercial plantings in Chowan and Currituck Counties.

Lettuce -- Damping-off (Rhizoctonia solani) in the plant bed continues to be a limiting factor in commercial lettuce production. However, the disease was less serious in 1942 than in the previous year, owing in part to the unusually dry fall of 1941 and to several rather extended periods of low temperature in January and February, 1942, which were unfavorable for disease development.

Pea -- Root rot (Aphanomyces euteiches) caused serious damage to field plantings in Beaufort County in May. In one instance the disease appeared to be primarily responsible for total failure of the crop.

Pepper -- Bacterial spot (Phytomonas vesicatoria) [Xanthomonas] was present on specimens received from Sampson and Duplin Counties. This

disease appears to increasing in importance in the commercial pepper area.

Soybean (Edible) -- The following diseases, none of which were particularly severe, were observed in variety test plots of edible soybeans in Wake County: Frog-eye (Cercospora daizu) [C. sojina], bacterial pustule (Phytomonas phaseoli var. sojense) [Xanthomonas], and downy mildew (Peronospora manshurica).

Sweetpotato -- Stem rot or wilt (Fusarium bulbigenum var. batatas) markedly reduced stands in numerous field plantings of sweetpotatoes in eastern North Carolina. The disease was also observed in plant beds in Pitt County.

Tomato -- Fusarium wilt (Fusarium bulbigenum var. lycopersici), southern bacterial wilt (Phytomonas solanacearum) [Pseudomonas], Septoria blight (Septoria lycopersici), root knot (H. marioni) and blossom-end rot (physiological) were all widespread in home garden plantings and caused substantial losses. Fusarium wilt was probably the most serious, often resulting in losses of 40 to 50%. Some of the wilt-resistant varieties, notably Marglobe, failed to hold up well. In one garden in Wake County visited in August, 31 of a total of 58 Marglobe plants all were affected with wilt. Southern bacterial wilt was at first suspected but subsequent isolation and inoculation studies showed that the disease was due to Fusarium. Blossom-end rot was of prime importance in many localities and a great deal of fruit was lost to this disturbance. Root knot markedly reduced yields in commercial plantings in Carteret County.

Other tomato diseases of minor economic importance encountered during 1942 included bacterial spot (Phytomonas vesicatoria) [Xanthomonas] and early blight (Alternaria solani).

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